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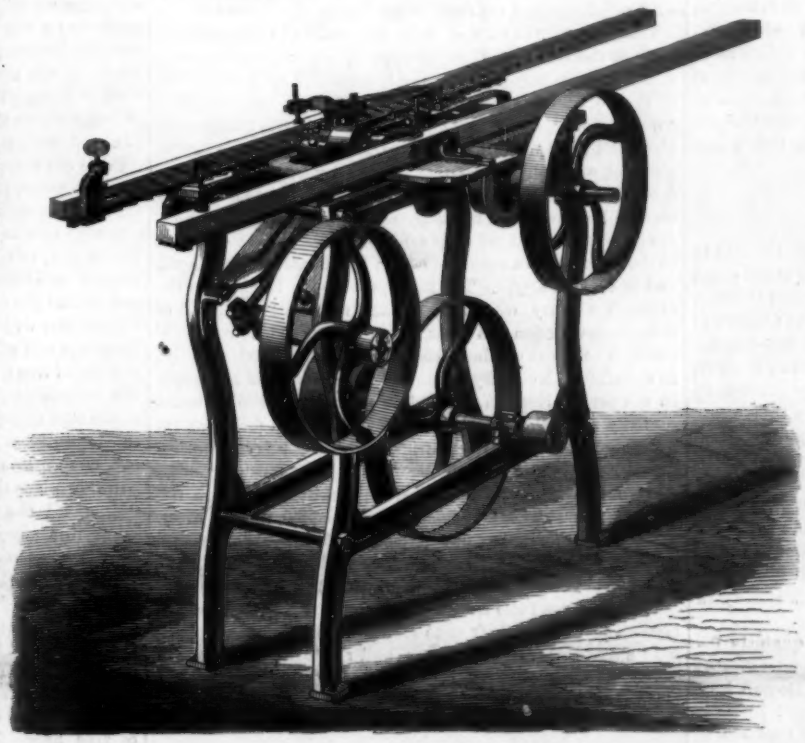
Improved Combined Mortising and Boring Machine.

The use of reciprocating mortising machines for recessing the stiles of shades for the reception of the ends of slats is not uncommon. Upright and horizontal boring machines for those blinds in which the slats may be turned have also been extensively used. This machine, represented in the engraving—which was patented through the Scientific American Patent Agency some time ago—is entirely automatic in its operation, and either bores the round holes for the reception of the pivots of turning slats, or mortises the recesses for the reception of the ends of those slats designed to be permanently fixed at a certain angle. The latter are made on this machine by means similar to those used in boring a simple round hole, the tool being a reciprocatory or traversing burr or bit, which can be used on hard wood, knotty pine, and other obstinate descriptions of wood, where ordinary machine chisels fail. The machine is self-operating in all its parts, and all the workman has to do is to put in the stiles and set the machine in motion, when it does its work, and, having done it, stops.

As seen by the engraving, the machine is very simple in construction, made entirely of metal, easy of operation, and durable. Agents for its introduction throughout the United States are wanted. For particulars address Martin Buck, Lebanon, N. H.



PATENT MACHINE FOR BORING AND MORTISING STILES OF BLINDS.

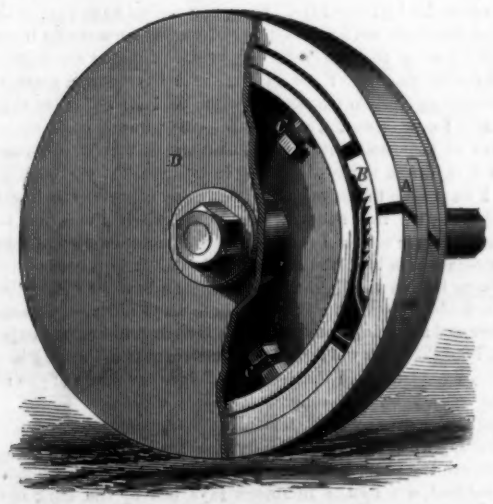
Sulphurized Paper.

Patented by Charles F. Crehore, of Newton Lower Falls, Mass.:—

The invention consists in subjecting the paper to the action of sulphur, preferably by immersing it in a bath of boiling or melted sulphur, the temperature of which is to be regulated by the required hardness of the finished material. The action of the sulphur has the effect of rendering the paper hard, semi-elastic, and water-proof, as well as compact in body, and with a susceptibility of high finish, if desired. Among the various instances of application of which the invention is susceptible, so far as the experiments made have proved it a success, a particular one is its use as press-paper for cloth printer's use, as well as for those of ordinary printing, the advantages of which will at once manifest themselves to persons skilled in the craft. For bookbinders' use the requisite amount of rigidity may be obtained with great reduction in bulk and weight, and, as a consequence, in cost, as compared with the material now in use.

ASKWITH'S IMPROVED PISTON PACKING.

One of the great difficulties met with by James Watt in his experiments with steam engines, was that of making a



movable obstacle to the expansive force of steam, impervious to the action of that subtile agent; in other words, to produce a piston which should be free in its action and at the same time fill the interior of the cylinder perfectly air and steam tight. In 1765 the best he could do was to employ several metallic glands or disks, holding rings of varnished canvas to bear against the interior surface of the cylinder.

Metallic packing, in which metal meets metal—unless separated by an infinitessimal quantity of water—is now the rule, and such packing has proved itself far superior to such makeshifts as those of which Mr. Watt was compelled to make use. Steam packing pistons and various spring and ring pistons have been brought to the attention of engineers, each claiming some peculiar advantage.

The one in the engraving is a single ring piston, the ring having across its cut a partition piece, A, pivoted at one end and shutting into a recess cut in the ring so as to prevent the passage of steam across the cut. The inner side of the ring has a piece, B, with ratchet teeth cut in it, with which teeth a fixed spring engages, acting as a catch or stay to hold the packing ring in place when expanded. The inner portion of the flange of the spider is furnished with set screws and check nuts, C, setting out against the ring. These are for keeping the ring in a central position and for expanding it, when it becomes worn or loose. The packing or ring is not intended to fit closely between the flange of the spider and the follower, D, but to allow a small portion of steam to pass to the interior of the piston, and through minute holes in the projecting circle of the spider through which the set screws, C, pass, to the interior face of the ring. It will be seen that this packing ring makes, with the spider and follower, a combination piston, being steam-packed and also adjustable. The ring for a 16-inch cylinder is only seven eighths of an inch wide by five eighths thick. In ordinary self-setting packing rings, when the steam is shut off, the ring will contract, thus permitting the steam to blow through if the throttle is suddenly opened, as is frequently done on locomotives. The spring and ratchet in this piston are intended to overcome this difficulty.

Patented through the Scientific American Patent Agency March 5, 1867, by John Askwith, of Chicago, Ill., who may be addressed for rights, etc., at No. 694 South Canal street, Chicago.

Preserving Eggs.

"I take about 10 lbs. of unslaked lime and 8 lbs. of common salt and dissolve or mix them with twenty gallons of water. In this solution I place the fresh eggs to be preserved, and let them remain from ten to twenty days. I then dissolve, in a small quantity of water, the following substances, viz., one quarter pound of chloride of calcium; one half pound of liquid phosphoric acid; one pound chloride of lime (or bleaching powder); one half pound of nitrate of potash. This solution I add to the former containing the eggs. In this preparation the eggs should remain for about thirty days before they are taken out or ready to market.

"The chloride of calcium prevents the eggs from drying up, and any other deliquescent salt may be substituted for it, but I prefer the chloride of calcium. Nitrate of soda, or other soluble nitrate, may be used instead of nitrate of potash, and any equivalent chloride compound may be used instead of the bleaching powder." Patented by A. Van Camp, Washington, D. C.

Roofing Compound.

Here is another of the many tar compounds for roofing, recently patented by R. C. Graves, of Barnesville, Ohio. Take forty gallons of coal tar, thirty gallons pulverized slate, ten gallons pulverized clay, five pounds boiled rice, one pound glue, one pound terra de sienna, and one gallon linseed oil. I mix the coal tar, slate, and clay together. I then boil the rice and strain it through a fine sieve, and liquefy the glue by heat. I then add the rice, glue and terra de sienna to the linseed oil, and thoroughly incorporate the entire compound together. It is then ready for use, and may be applied with a brush or trowel. This makes a roofing compound impervious to water, unaffected by heat or cold, and, when it hardens, perfectly fire proof.

Dietetic Salt.

One of the great evils that owes its origin to the scientific enterprise of the present age, is that any promising scientific scheme, after being brought into prominent notice, becomes for the time being quite the fashion, and is then entirely forgotten, often, too, from mere caprice. We hope that this fate may still be averted from Dr. Lankester's ingenious scheme of supplying necessary, but frequently overlooked, articles of diet, by means of his dietetic salt. This compound is a proposed substitute for ordinary table salt, chloride of sodium being a notable constituent; but in addition to this, which is far from being the sole or even most important inorganic constituent of our food, we have phosphate of lime, chloride of potassium, sulphates of potash and soda, with smaller quantities of magnesian and iron salts. The argument for their use is very strong. Leaving out the large proportion of epidemics, almost all the common diseases are directly traceable by modern physicians to dietetic errors; and those that certainly are due in part to deficiency of inorganic food, form by no means a contemptible list. Scurvy is known to arise from a deficiency of the salts of potash. Scrofula and consumption, rickets, and softening of the bones, occur when the phosphates of lime and other bases are deficient. Anæmia, chlorosis, and a variety of nervous disorders, are the result of an absence of iron, and are at once cured by the use of this agent as a remedy. In such cases, the medical man is in the habit of prescribing medicines containing these agents; and there can, therefore, be no doubt that the habitual use of these substances in the food, in the same way as common salt is employed, would be a means of preventing the occurrence of a large number of diseases. The quantities of the saline ngredients employed, in addition to the common salt, are so calculated that they shall be supplied in the same proportion by its use, as they exist in the human blood, and are got rid of in the body. Dietetic salt is one of those simple but useful applications of science of which the value is at once perceived; it deserves to hold a prominent place in the rank of articles of food, and it is to be hoped that it will not be lost in the crowd of similar inventions.—*Chemical News.*

ROESLER'S IMPROVEMENT IN MATCH SAFES.

The inventor of this device intends to provide a match safe which will hold a certain amount of matches and which will, at the same time, deliver but one at a time, then igniting it

and offering it to the hand, already lighted. The match safe is a receptacle of tin or other metal secured to the wall, or any other upright, the plate which supports the safe holding the safe itself by side springs to allow for a vibrating motion to the article when operated, so as to aid the matches in settling to the bottom of the safe.

The safe, A, is a little more than twice the length of an ordinary round match, having a partition across it in the center, and a longitudinal opening at the bottom. Directly below this opening is a rod and slide, B, and at each end are springs

C, forming, where they meet, a circular hole with serrated teeth for igniting the match.

In operation, the slide, B, is moved quickly toward either end of the safe, carrying with it—or, rather pushing before it—a match, which is ignited as seen and left with most of its length protruding from the jaws of the springs ready for the hand. This device was patented Oct. 29, 1867, by Adolph Roesler, who may be addressed for rights, etc., at Warsaw, Hancock county, Ill.

ANCIENT LOCKS AND KEYS.

If the time-honored maxim, "Love laughs at locksmiths," has, like the Spanish proverb, "held good in every age and clime," the muscles of Cupid's chubby face must have been relaxed toward that particular class of craftsmen, for a period not far short of forty centuries. The Egyptian locksmith, as he fashioned his curious contrivance out of the world-renowned Damascus steel, was probably the first to excite the sly god's mirth. Next in order came the fabricator of the "doore fastenings of dyverse colors made of brass and ivory," of ancient Rome; followed by the maker of the still more elaborate *Serrure de Tabernacle* in the medieval age, immortalized in early Christian Missals. The locksmith of the Celestial Empire then began to make his "strange instruments having wooden slides," the architecture of which was peculiarly adapted to the Summer House, in which the fair heroine of the "willow pattern" was kept in durance vile. Then the locksmith began to flourish in England; and by the time of good Queen Bess, the operations of the craft were so fully established in the towns of Staffordshire—to wit, Wolverhampton, Willenhall, and Wednesbury, that Cupid must have indulged in peals of laughter worthy of the immortal Comus; and after all the enterprise of later years, with its levers and wards, "detectors," and master keys, the Muse of Love is still able to chant, even in the hearing of Hobbs and Chubb:

"My father he has locked the door,
My mother keeps the key,
But neither bolts nor bars can part
My own true love and me."

The Egyptian lock, the rude carvings of which are said to have embellished the walls of ancient Karnak's temple and the Herculaneum, is thus described by Mr. E. Beckett Denison, Q. C.: "In this lock, three pins fall into a similar number of cavities in the bolt, and so hold it fast; they are raised again by putting in the key through the large key-hole in the bolt, and raising it a little, so that the locking pins are pushed by the key out of the bolt. The security afforded by this lock is very small, as it is easy to find the places of the pins by pushing in a piece of wood covered with clay or tallow, on which the holes will leave their impress, and the depth can easily be ascertained by trial." These locks were first introduced into England by the merchants of Phœnicia, who gave them to the Cornish miners in exchange for tin. Strangely enough locks of similar construction, but evidently "home made," are still to be found on the doors of many of the peasantry in Cornwall and Devon.

The locks of ancient Greece and Rome are quaintly described by the philosophers and poets of the time. Aratus compares the constellation of Cassiopeia to a Roman key, "having a curved stem," and a handle "shaped like the south stars" of the group. Curved stems were common in the keys of that age, and the poet Ariston applies to one of those articles the epithet, "deeply bent." Eustathius says that these ancient keys resembled sickles, and were sometimes so large as to be carried on the shoulder, as reapers bears their sickles to the harvest field. This statement is confirmed by Callimachus in his *Hymn to Ceres*, where he represents the priestess of Nicippe carrying a key on her shoulders. Homer's allusion to the lock and key on the wardrobe of the fair Penelope, will probably be better known. The passage is thus rendered by Pope:

"A brazen key she held, the handle turned,
With steel and polish'd ivory adorned.
The bolt, obedient to the silken string,
Forsakes the staple as she pulls the ring;
The wards respondent to the key, turn round,
The bars fly back, the flying valves resound;
Loud as a bull, makes hill and valley ring,
So roared the lock when it released the spring."

Eustathius, a Greek commentator on Homer, who flourished in the twelfth century, says that the key here referred to was very ancient, and was known as the "serpent key," from its resemblance of form. It was in use before the siege of Troy, although some writers persist in ascribing its invention to Theodore of Samos.

The medieval locks were, perhaps, among the most elaborate and artistic specimens of those articles ever produced. Beads, scrolls, or floral wreaths, exquisitely graven in steel, lined the edges. Angel forms, similarly wrought, surmounted the escutcheon, like the twin guardians of the fairies' grotto in the pantomime; while the surface of the lock presented as great a variety of leaves and flowers, all chased with the utmost skill, as Eugene Rimmel's beautiful bouquet. These locks were mostly found on the doors of the ancient continental cathedrals, or on the magnificent cabinets for which the middle ages were so famous; and Mr. Fairholt assures us, that, in either case, the lock constituted no mean part of the profuse decoration of the door to which it was affixed. The skill of continental locksmiths, after a considerable slumber, was revived in the seventeenth century, in the person of M. Reignier, a French artisan, who acquired great fame as the maker of "letter locks," with which the couriers' dispatch boxes were secured. A Dutch writer, Von Euse, passing over the claims of his own countrymen, ascribes to M. Reignier the invention of the letter lock, which is, in reality of Dutch origin, and was made a century before this French Chubb saw the light. An allusion to it is made in Beaumont and Fletcher's play, "The Noble Gentleman," printed as early as the year 1615, which completely sets aside M. Reignier's claim to the invention:

"A cap case for your linen and your plate,
With a strange lock that opens with A. M. E. N.:"—

and Carew, in some verses written five years later, has this reference:

"As doeth a lock that goes
With letters, for till every one be known
The lock's as fast as though you had found none."

The latter quotation partly explains the construction of the letter lock, with which M. Reignier's name will always be connected as their most famous manufacturer. The letters of the alphabet were engraved on four parallel revolving rings, which by pre-arrangement on the part of the owner were made to spell a certain word, or number of words, before the lock could be opened. If even the owner chanced to forget the "open sesame" on which he had determined, like the luckless youth in the story of Ali Baba, the door would remain closed against him, till the magic watchword was recalled.

The ancient Chinese lock verifies one of the wise sayings of King Solomon—"Men have sought out many inventions. . . . . there is nothing new under the sun." The fact has lately been disclosed that locks, "having sliders and tumblers," have for centuries been made in China, on the identical principles of action which have been "re-invented" by English patentees at various periods during the last hundred years. Some of the very oldest locks made by Chinese workmen were constructed almost entirely of wood, and adorned with grotesque carvings of "Celestial scenes," such as those with which modern tea-caddies have made us so familiar.

Tradition assures us that locks were made in England as early as the reign of Alfred the Great, and some go so far as to say that the ingenious monarch himself, like Louis XVI., of France, was an amateur fabricator of those articles. It is true, no doubt, that even at so remote a period, ingenious blacksmiths were wont to construct clumsy locks and keys, together with other articles of domestic use, when occasion demanded; but lockmaking was not recognized as a distinct craft in England until the fourteenth century; and two hundred years followed before it assumed proportions at all equal to those attained in earlier times on the Continent, in China, and in ancient Egypt. The locks produced in England in the fifteenth century were massive and strong; but chiefly of simple construction. Almost the only specimen now remaining is to be found on the parish church of Snodland, in Kent. In the sixteenth century commenced the display of ingenuity on the part of English locksmiths which has been uninterruptedly maintained since that time, and which forms an interesting chapter in the Curiosities of Industry. During Queen Elizabeth's reign, the bows of keys were usually ornamented by the insertion of a cross, and the locks were frequently made of metal, sometimes imbedded in oak cases. Latch keys—the terror of Mistress Caudle—also came into use about this period. Locks were for the first time made with alarm bells and chimes during the same period.

Some of these bells rang so loudly in case of any unlawful tampering with the lock as to arouse the whole street. Bells with chimes warned the inmates and alarmed the burglar in a much more soothing way. No sooner was the skeleton key of the intruder applied to the lock than the latter began to chime such some plaintive air as—

"Home, sweet home,
Be it ever so humble,
There's no place like home:"

a sentiment with which the chagrined housebreaker would doubtless concur as he took his precipitate flight.—*The Ironmonger.*

Science Familiarly Illustrated.

HEAT AND COLD.

BY JOHN TYNDALL, ESQ., LL. D., F.R.S.

Lecture VI.—Concluded.

I have had occasion to say to you once or twice in these lectures that no body in nature is absolutely cold. All bodies are more or less hot. Even ice itself is a hot body compared with solid carbonic acid. In fact, ice would be quite competent to make a mixture of solid carbonic acid and ether boil, it being hot in comparison. All bodies are warm, and all bodies are emitting rays of heat. Here is a platinum wire in front of the table, such as we have already operated upon. At the present time that platinum wire is emitting rays of heat of a perfectly definite character. If I connect this wire with our battery you will observe our old experiment. You see the wire is heated to redness; it emits rays of heat, and also, to some extent, rays of light. Before the electric current passes the wire emits rays of heat which are incompetent to excite vision; but when I raise the temperature of the wire thus, by sending the electric current through it, what becomes of its old rays of heat which it emitted in this invisible state? They still maintain themselves, and they become much stronger, but they are still obscure. We mix, with the luminous rays of that wire, the obscure radiation that issued from it before the current made it incandescent. If I go on shortening the wire, as in an experiment we made in an early portion of these lectures, we find it gets brighter and brighter, but the rays it emitted before it became red-hot at all are still mingled with the visible radiation. They exist, but they exist greatly intensified; so that the rays which issued from that wire before it became incandescent, are present, as well as the visible rays, but they are raised to a thousand times the intensity which they first possessed. They are still obscure, and have no power to excite vision, but they are, nevertheless, there with a thousand fold their first intensity. Now I must try to separate before you these luminous rays from the obscure rays; and I must endeavor to operate upon the obscure rays so as to show you some effects that they can produce. I think you will understand the process by which this can be done. I have here a small concave mirror, and this I will place behind the electric lamp. We shall have an image of the carbon points of the lamp produced in that way, and I will throw that image upon the screen. We have now thrown upon the screen an image of the carbon points, whence issues the electric light. If I take another mirror, and converge the rays by it, I can give you a larger image, which, perhaps, will be better seen. Here is now a large image of the carbon points produced in that way. The image is inverted. You see a considerable amount of light there, but Mr. Cottrell will now fill a vessel with an opaque liquid. The liquid which we use to obtain the opaque solution is called bisulphide of carbon: it is perfectly transparent; and here is the substance called iodine—very well known to many people. This bisulphide of carbon dissolves the iodine with great freedom, and the consequence is the production of this dark liquid, which is so wonderfully opaque that it would cut off the light of the sun at noonday. Strange to say, it is the quality and property of this wonderful substance to entirely cut away the luminous or visible rays upon which depend the colors you saw on the screen, whereas it allows all the rays of heat to pass through. The liquid is opaque to light, but perfectly transparent to radiant heat. Mr. Chapman will place a lens in front of the electric lamp; and thus we obtain this beautiful convergent beam or cone tracking its way through the dust of the room toward the thermo-electric pile, Mr. Chapman will, when I tell him, place the cell containing this opaque liquid in front of the electric light. That will cut off bodily all the light, but still the spot where the pile will be placed will remain very hot. [The cell and pile were then placed in position.] You see all light is cut away; but you observe that the needle at once marches away, thus proving that although the light is cut off, the heat rays are left behind.

I want now to try and make these heat rays more evident to you still, and for that purpose I have placed within this camera an electric lamp similar to what I have just used; and behind the electric lamp I have placed a silvered mirror. This mirror will reflect the rays of light from the electric lamp, and will cause them to issue through the window which you see in front. This window is formed of rock salt. Rock salt is exceedingly transparent to the rays of heat, and also to the rays of light; and it is for that reason that I use that substance. I now obtain a convergent beam from the electric lamp. You see a brilliant cone of rays. Mr. Cottrell will now place the opaque solution in front. There it is, cutting off all the light, so that you see nothing. But now I bring this piece of platinum opposite the dark liquid, and observe what occurs. The platinum is raised to a red heat, in perfectly dark air. If, instead of platinum, I take some dry paper, and hold it in the focus of the dark rays, you see I can ignite that paper. The paper is set on fire. This ignition is caused by the invisible rays of heat issuing from the electric lamp. I now take a thick piece of metal and hold it in the dark rays of heat: you see it is melted by the radiant heat, and drops down in liquid state. I will now burn a piece of zinc here. There, you see the zinc is actually set on fire in a place where there was perfect darkness. The air where this zinc is set on fire is perfectly unwarmed. Nothing would be easier than to ignite a cigar in this way in perfect darkness. For instance, here is one which I will ignite. You see it is instantly set alight in a place where there is absolutely no light. You might put your eye where that platinum was raised to red heat. I have cautiously approached my eye to that burning focus that you saw there, and allowed the rays bodily to enter the eye, and could neither see light nor feel heat. The retina was perfectly dead to those very powerful rays. Sometimes we obtain the combustion of magnesium by these rays. Here you see we have that beautiful metal set on fire in a place where there were no lights whatever—a space of utter darkness. I might set London on fire by means of these dark rays. I have here a glass jar containing oxygen gas, and into this jar I dip a piece of charcoal. I now bring the charcoal into the focus of the invisible rays of heat, and you see the charcoal is ignited by these dark rays, and burns brilliantly in this gas.

I want now to make one or two more experiments in connection with this subject. For this purpose I will take the same mirror which I have just used, and employ another camera which is at the end of the table. The mirror will be placed behind the light, and will reflect a beam of light along the table. Instead of allowing this beam to fall upon the audience, and annoying you, I will catch it upon another mirror just as I caught the ray of light by the mirror near the ceiling in an experiment early in the lecture. I dare say many of you see the intense reflection here. There is a focus which would burn your fingers most fearfully if you put them there. I dare say we shall be able to inflame paper at that focus. There you see the paper instantly set in a blaze; and this blaze is produced, not by the luminous rays, but by the dark ones. You might put a sensitive thermometer there and have no result. It is only when the heat falls upon this paper that the heat is produced. We can burn zinc here as I did in the dark rays. You see the zinc is set on fire and blazes up almost like a piece of paper. Here is a small vessel containing water, and I will place that in the focus of the rays. I now place another vessel of water in such a way that the light has to pass through it. This will intercept the dark rays which give the heat, though it does not sensibly interrupt the rays of light. At the present time the focus of rays falls upon the former vessel of water without any effect whatever

being produced upon it. I will now withdraw the vessel of water through which the beam passes before it reaches the mirror, and so allow the heat rays to pass, and you see the water in the vessel at the focus of the rays immediately begins to boil. After a time this water will be thrown into a state of violent ebullition. It is already boiling. This action is due not to the rays of light, but entirely to the dark, invisible rays of heat of which I have been speaking.

I make these experiments for the purpose of bringing home to your minds the fact that we owe all our rivers, all our glaciers, and all our snow, entirely, or almost entirely, to these dark rays. The luminous or bright rays of the sun fall upon the tropical ocean, and pierce it to great depths: they are not absorbed; but the non-luminous rays—the heat rays of the sun—strike upon the tropical ocean, and they are absorbed very near its surface. It was by the absorption of the dark rays that the water was boiled in the last experiment. These dark rays of the sun, which strike upon the tropical ocean, and are then absorbed, heat the surface of the ocean, and thus it is that all the moisture or evaporation is produced.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

Kerosene Lamps.

MESSRS. EDITORS:—Kerosene may stand the usual test, so as not to produce any vapor under 110° F., which vapor, when mixed with air and ignited, would explode. In this respect it may be perfectly safe. But when by upsetting the lamp, or other accident, some oil is spilled, and particularly, when the oil covers the hot exterior parts of the lamp and of the burner, it easily catches fire. The heat of the fire forces a greater quantity of oil out of the lamp, which very soon is enveloped in flames. When this occurs, it is like a bombshell filled with Greek fire. The burner being firmly screwed on, there is not sufficient escape for the gas, which the heat of the flame must produce, and the consequence is, that the lamp must burst and scatter the burning oil in all directions.

As an example of this kind, I would state a little incident which will illustrate the manner in which most of the kerosene accidents occur. On the evening of October 23, 1867, on board of the Harlem steamer *Sylvan Stream*, a kerosene lamp fell from its bearing upon a seat, and soon was enveloped in flames from the cause as above represented. It was then thrown off the seat and rolled upon the floor enveloped in flames, leaving a track of burning kerosene behind. Here I threw a hat upon the lamp, pushed it further away from the fire, and by pressing the brim of the hat closely down on the floor, I succeeded in smothering the fire around the lamp, which I then carried away. At this time the lamp was covered and dripping with oil, which still continued sputtering through the burner. In seeing it in this condition, I had a rare chance to obtain some idea how such a lamp would explode.

Concerning the inflammability of kerosene, any person can easily satisfy himself by pouring a small quantity of the oil on a piece of board, and trying to ignite it with a match. I have tried in this manner kerosene from various dealers, and always found it inflammable. I believe any person, who uses such oil, should take note of this.

The present kerosene lamps seem to be rather unsafe. To meet this point I venture to suggest some improvements, viz: The lamp should be provided at one side with a little mouth for filling, and this should not be closed by a screw cap, but simply by a little cork, which would serve as a safety valve in case the oil should tend to explode from any cause whatever. In this cork should be inserted a small brass tube for admitting the air, which is to replace the oil in the lamp as it is consumed in burning. The present practice of admitting the air through the burner for this purpose, seems to be rather dangerous. For greater safety, the lamp should be of brass. It should be inclosed in a brass case, and the space between the lamp and this case filled with some non-conductor of heat, so that if any such accident should occur, as above stated, the heat of the flame would not affect the oil in the lamp. For some kinds of lamps this case could be made in the shape of a globe, a little flattened at the bottom, and with some lead or a plate of iron attached inside as ballast, so that if the lamp be accidentally upset or thrown out of its place, it would erect itself automatically.

For ordinary use in private families, kerosene may always remain the best and cheapest means for obtaining a fine light, but on railroads and steamboats it seems to be in the wrong place. For such purposes it is not necessary to remain dependent on candles; the finest light can be obtained by any other kind of lamp oil, which is perfectly safe, and not so inflammable as kerosene, or any other distilled oil. The red, dim light, and the disagreeable odor produced by an old-fashioned oil lamp, is due only to an imperfect combustion, and to a low temperature of the flame. This can be remedied by the addition of a glass chimney, and by a properly constructed burner, by which the temperature of the flame is raised to a higher degree, so that the minute particles of solid carbon (the soot) in the flame will glow at a white heat, and thus produce the fine, white light.

Astoria, L. I. J. G. KONVALINKA.

About Text Books for Mechanics.

MESSRS. EDITORS:—Did it ever occur to you that writers ostensibly for the improvement of mechanics seem to vie with each other as to which shall make their pretended instructions the most muddled and difficult of understanding? I am over forty years old, a practical mechanic since I was seventeen, and although I have bought, borrowed, and—stolen books on mechanical subjects ever since that time, all I know about mechanics I have gained by hard knocks, and not from professed teachers who write books for mechanics. Why is it that when the simple branch of geography, as taught in our schools, is brought down to the apprehension of the dullest or least developed intellect, and even the "dry" and abstruse study of grammar may be made interesting and attractive, the comparatively simple although wonderfully useful subject of mechanics cannot be treated by those who profess to be teachers of mechanics in a similar way? The only reason I can assign is the desire on the part of these self-called teachers to exhibit their erudition and show their pedagoguism. I am tired of their nonsense. I am tired of purchasing books, at big prices, pretending to give me and my brother mechanics information, when they are filled with mathematical signs, which we have never had an opportunity to learn and which are simply Greek to us.

We workers have no opportunities to study mathematics; we have all we can do to work our task, to keep body and soul together, and to do our duty to our employers and ourselves. It is certain that these signs and symbols may be superseded by plain English, and that they are not so in our mechanical works is a very sufficient reason why the works of these pretended instructors do not have a greater sale and circulation among our mechanics.

It is pleasant to know that the SCIENTIFIC AMERICAN is popular enough and that its managers are thoughtful enough to discard the pedantry that rules our text-book manufacturers, and give our mechanics—some of them illiterate—information shorn of this miserable nonsense, which few but the writers can understand. To you, Messrs. Editors, the mechanics are greatly indebted. Your clearly cut, concise, and lucid descriptions of machines and inventions, and your practical editorials are just what we mechanics need; and when we turn from the pages of the SCIENTIFIC to the pretentious volumes of mechanical writers we go from light into the fog.

Will you use your influence to induce those who pretend to write for mechanics to write so that the least learned can understand what they read? J. G. B.

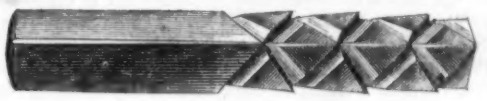
Boston, Mass.

[We recognize the difficulty our correspondent so forcibly presents. There is too much truth in his complaints; and there is no sufficient reason why writers on mechanical and even scientific subjects should not use plain language, without the employment of so many mathematical signs and chemical symbols.—EDS.

Improved Form of Drift.

MESSRS. EDITORS:—I herewith send you a model of a drift of my invention which you may illustrate and describe in your paper for the benefit of the public. This model I made in twenty minutes.

I first make the steel blank square, straight or tapering, as desired, then with a half-round file I begin at one corner of the end and file a groove obliquely across one side of the blank, then turn the blank toward me and in like manner file



a like groove on the next side and so on, forming a thread. I then begin at the opposite corner from where I first began and proceed as before, when I have two threads or a double right-handed thread. I then, in like manner, file two left-handed grooves, taking care that they intersect the right-handed ones at the corners of the tool. The grooves should be filed under, making the threads a little hooked toward the end. When the grooves are finished as described, each side of the tool shows a series of triangles, the planes of which are then filed back, care being taken not to lessen the lower corners and the tool is ready to harden and temper.

The main object of this invention is to make a drift that will give a good cut at the corners. The teeth running spirally around the tool can be filed back without injury to the corners. The chips or cuttings will not clog, but will either follow the grooves around the tool or zig-zag up its sides. The grooves being spiral do not make a checked place around the tool and weaken it as is the case with the ordinary drift. For light and fine work its great strength and the ease with which it cuts, will make this tool highly prized by all machinists. AMOS SHEPARD.

New Britain, Conn.

The City Flower Gardens of Paris.

At the ball given recently at the Hotel de Ville, seven thousand white and rose camelia trees were employed to decorate the apartments, which trees were sent from the city gardens. There are now two million camelia plants in the camelia houses, which cover a superficies of forty-eight thousand meters, which space being found insufficient for the supply required, underground houses are being constructed, the excavations for that purpose extending over thirty thousand square meters of ground. Four head gardeners superintend this vast flower manufactory—a word not wrongly applied, inasmuch as by their wonderful application of heat in forcing houses, they obtain a plant of some inches in hight in as many days. The sixteen hundred thousand plants which adorned the squares, public gardens and parks of Paris last summer, have been replaced by evergreen shrubs of every variety, so that the Parc Monceaux, the Champs Elysees gardens, etc., appear so green and flourishing that one scarcely misses the magnificent glow of color which contributed so much to the beauty of Paris a few months ago. The City Conservatories just now possess a splendid specimen of the Java pitcher plant, each goblet of sugary water being of unusual size.—*The Ruralist.*

SKETCHES FROM THE PARIS EXHIBITION.

Number II.

TUNGSTEN AND ITS PRODUCTS.

As early as 1781 the German chemist Scheele, a worthy contemporary of the unfortunate Lavoisier, established the constitution of the mineral tungsten. He showed that this mineral, before considered as a tin ore, consisted of lime and a peculiar acid. Three years afterward the brothers Du Luyart recognized in the latter a new metal, which they called wolfram (from the mineral of the same name), or tungsten. Malaguti, Berzelius, and Riche investigated these ores; they discovered the process of separating the tungstic acid, a yellowish insoluble powder, from the tungstate of lime, a mineral found also in this country. In digesting this ore with muriatic acid, it is decomposed, chloride of lime being formed and tungstic acid separated.

Wolfram was considered for a long time an iron ore. It occurs generally in the primitive rocks associated with tin ore, topaz, fluor, and apatite. Many analyses were made before it was found that it consisted of a varying mixture of tungstate of iron and manganese; it met, however, no application until quite recently, when Oxland published a mode of preparation of the tungstate of soda of mechanical value He gave at the same time to this product an application, in employing it as a mordant in dyeing, instead of the tin preparation. In immersing woolen fabrics in a slightly acidulated and hot solution of tungstate of soda, they become mordantized; in exposing them afterwards to a decoction of Campeachy wood they are dyed violet, which color becomes perfectly black upon exposure to air. This application has to our knowledge been entirely forgotten, although the crude material is now a great deal less expensive than formerly.

Tungstic acid may also be obtained as a beautiful yellow powder, forming an excellent paint. When it is digested with dilute hydrochloric acid and metallic zinc, it is converted into a very handsome blue color, called blue carmine, and if both yellow and blue are mixed together, we obtain a green of different shades, which is not poisonous and is a perfect substitute for Paris green. In adding a solution of yellow prussiate of potassa to tungstate of soda, a brown precipitate with metallic luster is obtained, very similar to umbre, and if a solution of chloride of zinc is added to a tungsten salt, we get a color similar to carbonate of baryta. If, again, one equivalent of tungstic acid is added to one equivalent of melting tungstate of soda and the thus formed product carefully heated with tin scraps, we obtain a slag which, upon being treated with a mineral acid, leaves fine orange crystalline spangles. In exposing them to heat, they assume a steel-blue color; in heating the potassic tungstate, a violet product of copper luster, similar to sublimed indigo, is obtained. These compounds may be employed either for bronzing or in printing wall papers.

Menier was the only one who had a collection of all these preparations. Barnell exhibited the tungstate of soda in large quantities, and Knapp, from Strasbourg, excelled in beautiful bronzes. Russia also proved that she explores her deposits in the Hartz mountains.

The Chemical Action of Light.

Professor Roscoe, F.R.S., of Manchester, Eng., has devised some very curious and interesting lecture experiments illustrative of the action of the chemical rays upon certain descriptions of common matter, one of which is the following: A bulb of very thin glass, about the size of a hen's egg, he fills in the dark, or by the aid of a yellow light, with a mixture of pure hydrogen and chlorine gases, the gases being produced by the decomposition of hydrochloric acid by the voltaic current. The room being darkened the bulb thus prepared is placed in a four-sided lantern provided with red and blue glasses. Now having covered with a cloth all the sides of the lantern except the one fitted with red glass, the lecturer places a long-stoppered glass jar filled with nitric oxide and bisulphide of carbon vapor in front of the exposed side and on applying a burning match to its mouth a brilliant flash of pale blue light, rich in chemical rays, is the result. But as red glass absorbs such rays, none can get through to the glass bulb which is fixed in the lantern. A second jar of the mixed vapors is next fired in front of the lantern's side fitted with blue glass, and as the latter transmits the chemical rays, the union of the hydrogen and chlorine gases is the result and the bulb is burst in the explosion which follows.

The Hugon Gas Engine.

The advantage of this over other gas engines consists in the dispensing of electricity, with its accompanying complicated arrangement of batteries and other encumbrances. By a simple arrangement the illuminating gas from the street mains, as soon as turned on, enters the cylinder mixed in its passage with about nine times its bulk of common air, forming a very explosive mixture. In starting the engine all that is necessary is to light two ordinary jets of gas, which in turn light two others, these last inflame the explosive mixture in the cylinder, and being extinguished by the explosion, are relit by the two jets fixed outside the cylinder. At the moment of explosion a very fine spray of water falling on the piston—the heat being then 1,200°—becomes steam, thus reducing the heat and equalizing the pressure throughout the stroke, so that the engine lubricates itself by its own action. It is entirely automatic in its working; no smoke; no supply of fuel need be kept on hand, and it neither requires skill to start it nor any attention during its action. A three-horse engine attracted great attention at the Paris Exposition.

THE WHEEL QUESTION.

"How many revolutions on its own axis will a movable wheel make in rolling once around a fixed wheel of the same diameter?"

We continue to receive letters from the more distant parts of the country upon this subject, and the discussion seems almost endless. The Cadets at the U. S. Military Academy, West Point, N. Y., have of late been giving it some attention, and if we judge from the sketches sent us they have performed some very amusing practical experiments.

A few of the two-revolutionists have been candid enough to say that in the example we gave, Fig. 11, the movable wheel undoubtedly revolves but once on its own axis. But for the most part they maintain a dignified silence in respect to that example, and also in respect to the printing wheel, Fig. 17, and the rolling wheel Fig. 18. They continue to rely upon diagrams which perplex the eye, astronomical observations, etc. Their main support is in theorems and postulates like those of L. M., who complains very earnestly that we did him injustice in publishing his last communication. For the purpose of saving space we united two of his separate diagrams into one. Thus placed together he sees their absurdity, but insists that their correctness will be apparent if arranged as he intended, and thinks we ought to set him straight. We accordingly do so and herewith we republish his communication with the separate diagrams as furnished by him.

Messrs. Editors:—In the progress of this discussion it is increasingly manifest that the variance in the views of your correspondents arises, mainly, from the variant meanings we attach to one or more words and phrases. Under this impression I recently addressed to certain friends of mine a simple but very pertinent question, to which, aside from their characteristic courtesy, they failed to respond. I must, therefore, without their coveted aid, offer you some notions of my own.

I would ask of all who take an interest in the question to concur with me in simplifying it, by confining our attention to those points alone that are essential to a competent understanding and correct solution of it. This will exclude all side issues that would confuse or mislead.

The question is a simple one:—"How many revolutions on its own axis will a wheel make in rolling once around a fixed wheel of the same size?"

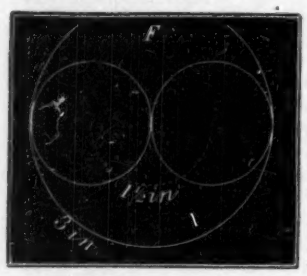
The machinery thus indicated consists of two wheels of same size, one of them fixed and the other free, the fixed wheel and all the movements of the other being restricted to one and the same plane. *This is all.* And we must refuse the introduction of lines, pins, axles, or anything else. They are not needed.

A. The axis, contemplated by the question, is located in the center of the wheel, and is a geometric or imaginary line, having length, without breadth or thickness. Therefore, to speak of a revolution of the axis itself is absurd.

B. A "revolution on its own axis" means such a movement of a rolling wheel as causes a right line drawn through its centre to point successively to every surrounding point in the plane of motion, and every particle of its mass to pass once on every side of its axis, no matter to what extent or in what direction the axis itself may move.

C. The distance traveled by a wheel is determined by, and is equivalent to, the length of the path of its axis, whether curved or rectilinear.

D. Roll a wheel over a right line of the length of its own circumference, and the path of its axis will be of the same length; but less if the line rolled over be concave, and greater if the line rolled over be convex, the extent of these differences being governed by the elements of the respective curves.



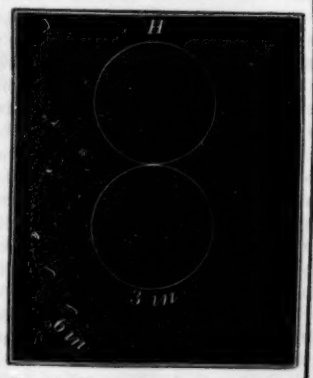
E. Divide the length of the path of the axis of a rolling wheel by the length of its circumference, and the quotient will be the number of revolutions made by the wheel around its own axis.

Examples. — Take a wheel one inch in diameter — its circumference three inches:

F. Roll it 3 inches over the concave surface of a curve of 2 inches diameter, and the path of the wheel's axis will be 1½ inches. Then 1½ divided by 3 equals ½ a revolution on its own axis.

G. Roll it 3 inches over a right line, and the path of the axis will be 3 inches. Then 3 divided by 3 equals 1 revolution on its axis.

H. Roll it once around the convex surface of a wheel of same size, and the path of its axis will measure 6 inches. Then 6 divided by 3, equals 2 revolutions around its own axis.

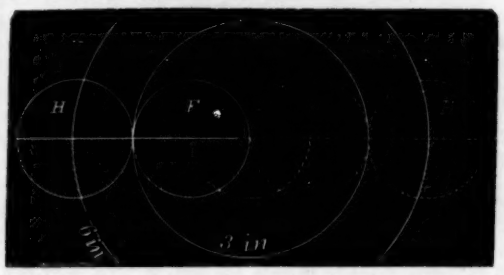


This last example, I contend, furnishes the correct answer to the question at issue.

The foregoing paragraphs, marked A to E, are submitted merely as postulates. Should they be accepted as truths (and I have no doubt of their being such), the conclusive force of their application, in the examples F, G, and H, seems to me irresistible. I will gratefully welcome a frank exposition of anything erroneous in them, and will as frankly acknowledge it, if I cannot show the objection to be groundless. But I must be allowed to deprecate a naked assertion of dissent, unaccompanied by an explanatory why or wherefore. L. M.

Germantown, Phila.

In the previous publication of the above communication, we omitted the separate diagrams, F, H, and substituted for them the following,



which, it will be observed, contains the elements of both, namely, two wheels, F, H, of same diameter, rolling on a curved line of same length, one wheel being concave, the other convex. Two wheels, thus arranged and moved together, we stated would revolve the same number of times upon their own axes in rolling once over the curved path. But, according to the postulates of L. M., the wheel, H, makes twice as many revolutions as F, in rolling over the same path. This strikes us as absurd, whether illustrated in two separate diagrams or in one; and his whole communication, regarded as an effort to demonstrate that a movable wheel revolves twice on its own axis in rolling once around a fixed wheel of the same diameter, rather muddles than clears up the subject.

The Tallest Chimney.

The chimney at the Port Dundas Works, Glasgow, belonging to Mr. T. Townsend, says *Engineering*, is the tallest chimney and one of the highest masonry structures in existence. In Europe there are only two church steeples, those of the Strasburg Cathedral and of St. Stephen's Church, in Vienna, which, by a few feet, exceed the hight of this chimney, and the great Pyramid of Tizeh was—but is not at present—the only other human erection exceeding this great chimney in hight. The dimensions of Mr. Townsend's chimney are: total hight from foundation, 468 ft.; hight above ground, 454 ft.; outside diameter at the level of ground, 32 ft.; outside diameter at the top, 12 ft. 8 in.; thickness at ground level, 7 bricks; thickness at the top, 1½ bricks. From this it will be seen that the portion below ground, which contains not only the foundation proper, but also the flues, with their arches and coverings, occupies a depth of 14 ft. The flues are four in number, placed at right angles to each other, so as to form an equilateral cross in the plan; they are of rectangular section, about 7 ft. wide and 9 ft. high each, and arched both at the top and bottom. The foundation below these flues is built up from hard bricks, all placed on edge throughout several superposed layers up to the sides of the flues, which are arched and lined with firebricks. The masonry above the flues is built with the bricks laid flat in the usual way. The internal diameter at the base is 20 ft., and it gradually contracts toward the top to 10 ft. 4 in. diameter.

The outline of the whole structure is of extreme simplicity, viz., the form of a truncated cone, without any deviation, ornamentation, or addition. The "batter" is straight from the bottom to the top, and there is no "cap" or other protruding ornament at the top. The section is circular throughout. Before constructing this extraordinary piece of masonry, the plans and details of it were submitted to Prof. Rankine, for his advice and opinion respecting the safety and stability of the proposed structure. Prof. Rankine was at the time, as he is now, considered the first authority upon the stability of chimneys, and it is understood that few chimneys of more than ordinary size are built in this country without his being consulted on the subject, the calculation of the strains upon the different bed-joints or horizontal sections of a chimney being a subject of greater intricacy than may appear at first sight.

The Port Dundas chimney has, during its erection, undergone one of the most interesting and curious operations known in masonry practice, viz., the straightening by sawing the mortar joints. This operation has since been frequently resorted to in similar cases, and has always proved very successful. It is understood that Mr. Duncan Macfarlane, of Glasgow, who had obtained some experience in this kindof work in Lancashire, although with chimneys of moderate sizes only, suggested this operation to Mr. Townsend, after his chimney had been bent by a violent storm, which took place during the erection of the highest portion of this chimney. The mortar in the newly built portion of the work being still soft and plastic, the pressure of the wind caused a lateral deflection of the column, amounting to 7 ft. 9 in. from the vertical at the top. The whole structure was thereby endangered, and in order to restore its stability, it was necessary to bring it back to the vertical line. The operation of sawing, which was then resorted to, consists in attacking the mortar joints at the windward side, and to reduce their thickness, so as to compensate for the compression of the mortar joints at the opposite side, effected by the pressure of the wind. The sawing was done by first removing a portion of the brick work inside the chimney, forming a groove about 14 inches wide half around the interior surface of the chimney. Narrow holes were then cut out by means of chisels, the workmen standing upon the internal scaffolding, and working exclusively from the inside. A saw with a single handle—in reality an old carpenter's saw—was the instrument employed. It was passed through one of the holes cut out so as to work through a horizontal mortar joint, and it was then worked by hand, removing the mortar, as it proceeded through the joint through part of the half circle on the windward side. Generally two saws were simultaneously employed, working in opposite directions toward each other. The mortar joint operated upon was kept wet by a jet of water during the whole process, and the removed brickwork in the interior was replaced by fresh bricks as the sawing proceeded. As soon as the greater portion of any one mortar joint is sawn through, the effect produced upon the superincumbent mass causes the latter to settle, and a considerable pressure is thereby exerted upon the saw, making it difficult to withdraw. If the precaution is taken to commence sawing at the lowest joints, and proceed in succession to the higher cuts, this difficulty is considerably lessened. In the case of the Port Dundas chimney, sawing was commenced at the top, 128 feet below the chimney cope, and twelve cuts were made in unequal distances, varying from 12 ft. to 49 ft. Mr. Townsend, who conducted this operation personally, judging by the effects produced by each incision, selected the spot for the next cut, proceeding gradually downward until the last cut, 41 ft. from the ground, restored the whole chimney to a perfectly perpendicular position. The chimney after sawing stood more correctly perpendicular than it had been before the action of the storm, and it is now more correct in that respect than the majority of well-built chimneys of much smaller sizes. The operation of sawing occupied nine days, from the 21st September till 1st October, 1859, and the chimney has from that date remained in its perfect condition, requiring no further strengthenings or repairs. It is, independent of its size, one of the best specimens of substantial and well-made brickwork in existence.

Composition for Stuffing Leather.

Prepare in a suitable tank or kettle about eight gallons of alkaline solution, which may be strong lye, or a solution of potash, or other similar solution, with considerable heat applied to the bottom or sides of the tank or kettle, or by steam to the substance within. Then add to the alkaline solution about one gallon of fatty oil or grease, or from eight to ten pounds by weight, intending to add as much oil or grease as can be incorporated with the alkali. After these two ingredients have become considerably mixed or incorporated, add to the mixture from two to five pounds of common rosin, and stir or agitate the mixture while under the action of the heat till the whole is well united into a mass. Then add from one to five ounces of soda ash, and again stir or agitate the mass for a short time, when it will become thickened to the desired degree or consistency for use after cooling, or to be removed and put up in cans, jars, or cakes. Patented by John Haseltine, of Warren, N. H.

Editorial Summary.

Action of Water of Lead.—Professor Bötger inquiring into the cause of the action of distilled water on lead has found it to be due to the presence of carbonate of ammonia, and not, as is usually ascribed, to the air dissolved in the water. After having been boiled for a time, distilled water will not attack the lead until after a considerable exposure, when a reabsorbtion of ammonia and carbonic acid from the air, where they are always present, may be supposed to have taken place. Bötger has further found that the alloying of the lead with a small amount of tin protects the former from being acted upon, and this fact suggests the advantage of purposely introducing a little tin into the metal from which lead piping is to be manufactured.

Carbolic Acid for Burns or Scalds.—Dr. Wilson writes to the *Lancet* that he has recently used carbolic acid with marked benefit in the treatment of severe scalding. He recommends the mixing with thirty parts of the ordinary oil and lime water, one part of the acid. Linen rags saturated in the carbolic emulsion are to be spread on the scalded parts and kept moist by frequently smearing with a feather dipped in the liquid. Two advantages of this mode of treatment are, the exclusion of air, and the rapid healing by a natural restorative action without the formation of pus, thus preserving unmarred the personal appearance of the patient—a matter of no small importance to some people.

The fact has been satisfactorily demonstrated at the Shoeburyness trials, that a cannon ball will penetrate a target with much greater ease with a range of 200 yards than with a range of 70 yards. The supposed explanation for this fact is that the shot "wobbles" a little on leaving the gun, and requires time, and consequently space, to settle down to a steady whirl. The fact that the holes made at 70 yards are larger than those made at 200 yards, supports this hypothsis.

Gears without "Backlash."—For a number of mechanical purposes, a gear that may be made into a train of two or more, working without "backlash," is very desirable. Such a gear we believe to be possible, and the attention of our mechanics and inventors should be directed to this end. Slashed teeth gears are inefficient, and absorb much power by friction. Something better ought to be contrived.

The gross receipts in round numbers of the Paris Exhibition were twenty-nine million francs and the expenditures twenty-seven millions, leaving a profit of about $400,000, which is much better than was at one time expected. The building is now being taken down.

When a belt becomes slack do not twist or turn it, but "take it up" in a workmanlike manner. The belt is probably more valuable than the time required.

Notes on Recent Scientific Discoveries.

NEW ALLOYS.

Two new alloys of tin and lead are described by M. Plho. While containing less tin than is used in common pewter, they are said to possess most of the advantages of that useful alloy. They are not acted upon by vinegar, sour wine, or salt water. The first is made by melting 1 part of tin with 2·4 parts of lead. The lead is first melted and skimmed, then the tin is added, and the mixture is stirred continually with a wooden stick until it begins to cool, to prevent the lead from settling to the bottom. This mixture has the density of 9·64, and its melting point is 320 deg. Fahr. It may be rolled cold, and the plates do not crackle when bent. It takes a very good polish, and tarnishes but little on exposure. It will mark paper like lead, and is so soft that it may be scratched with the nail, but it will not foul a saw or file.

The second alloy is made by melting together in the same way 1 part of tin with 1·25 parts of lead. This alloy is less elastic and harder than the foregoing. It is rather brittle, less malleable than the former, and fills up a file. Neither of these alloys was acted on by boiling with acetic acid for half an hour, and standing in the acid for twenty-four hours longer, nor had salt water any action upon them; hence, they may be useful for some kinds of utensils.

STAINING WOOD.

Dr. Stolzel adds another to the many recipes already given for staining wood of a brown color. He first of all paints over the wood with a solution made by boiling one part of catechu (cutch or gambir) with thirty parts of water and a little soda. This is allowed to dry in the air, and then the wood is painted over with another solution made of one part of bichromate of potash and thirty parts of water. By little differences in the mode of treatment, and by varying the strength of the solutions, various shades of color may be given with these materials, which will be permanent, and tend to preserve the wood.

PRESERVING WOOD.

We have recently seen notices of the extended use of alkaline silicates in Germany for the preservation of building materials, both stone and wood. The latter application may be noticed here with the remark that such a fire as that which recently occurred at Charing-cross Station could not have happened if the woodwork had been protected by the means noticed. The cost is but small, and the immunity it gives from fire is complete. According to the expired, and almost forgotten, patent of De Wylde, the woodwork is first saturated with a very dilute solution of silicate of potash, as nearly neutral as possible, and when this has dried, one or two coats of a stronger solution are given. When lives are lost by fire almost daily, it seems strange that such means of protecting wooden staircases and flooring should be neglected.

ZINC CEMENT.

We have before mentioned Soret's cement, which is formed by making oxide of zinc into a paste with a solution of chloride of zinc. This paste quickly sets into a hard mass, which may be applied for stopping teeth and a variety of useful purposes. Dr. Tollens gives a cheaper form of the same cement, which may be used for stopping cracks in metallic apparatus, and cementing glass, crockery-ware, and other materials. He mixes equal weights of commercial zinc white and very fine sand, and makes the mixture into a paste with a solution of chloride of zinc having the density 1·26. The mixture sets rapidly, but allows plenty of time for its application. As it resists the action of most agents, it will be very useful in the chemist's laboratory.—*Mechanics' Magazine.*

Preserving Dead Bodies.

Profs. Chas. A. Seely and Chas. J. Eames, of New York city, have obtained a patent for the impregnation of dead bodies with carbolic acid, which is said to be superior to the old Egyptian method.

"We apply the antiseptic liquid to the surface of the body, and also, when deemed advisable, we inject it into the stomach and intestinal canal. For the external application we take a solution of the acid in water, or other convenient solvent, and wash the body with it, by means of a sponge or cloth, and when the first washing has been finished, we repeat it one or more times; or, when convenient, we immerse the body in a weak solution of the acid for a short time; or we saturate cloths with a solution of the acid, and then wrap or wind the body in the cloths so saturated, and allow them to remain on the body. The body thus brought in contact with the liquid absorbs it by degrees, and the decomposition of the body is arrested or prevented.

"We have found that in many cases, and especially in cold weather, the external application of the antiseptic is sufficient to prevent change within a few days. But when it is desirable to keep the body for a long time, we inject a small quantity of the antiseptic into the cavities of the chest and the abdomen. We make the injection by the use of a syringe, and at the natural external openings to the cavities. The amount of liquid to be injected should be at least a few ounces, and we find no objection to the use of such a quantity as will distend the cavities. In addition to the applications of the antiseptic, as above described, we sometimes find it useful to place cotton, wool, lint, or cloth, saturated with the acid, in the nostrils and in the ears.

"Our process, when carried out, as above described, is entirely efficient for the preservation of a body during the ordinary interval between death and burial. But, when the process is used as an embalming process, or when there are no objections to making incisions into the body, we prefer to inject the acid into the arteries and veins, or, in addition to the ordinary external and internal application of the acid, we inject some of the acid through an opening of the skull into the substance of the brain.

"For a further security against decomposition of the body, and especially when the cloths saturated with liquid are not kept permanently about the body, we place at the bottom or sides of the coffin sheets of felt or cloth, or similar fibrous material, which has been saturated or dampened with the antiseptic liquid.

"In combination with carbolic acid, we have used bisulphite of lime and bisulphite of soda, and a solution of sulphurous or acetic acid with advantage. But we are satisfied that carbolic acid is the most active and useful agent for our purpose, and that any addition to it is not essential to success. We have found the use of a mixture of carbolic acid with saw-dust, or other inert granular matter, often advisable in the bottom of the coffin."

(From the British Journal of Photography.)

Contribution to the History of Photography.

There are none who will not read with pleasure the following communication by the late lamented M. Claudet, which contains much historical matter of great interest. It is the substance of a letter addressed by M. Claudet to Mr. P. Le Neve Foster, Secretary to the Society of Arts, in reply to a congratulatory letter on the occasion of M. Claudet's receiving a high and well-merited honor:—

MY DEAR FOSTER.—Immediately on the discovery of Daguerre, I went to Paris, saw him, and bought from him the first license to work out his process under the patent he had taken in England. I came back brought all the specimens I could procure—made by his pupils, for he was attending once a week at the *Conservatoire des Artes et Metiers*—to instruct all the adepts and give them the information they wanted to master the process. I sent to the Royal Society's soirees the best specimens, after having submitted a collection of them to the Queen, who kept the best of them.

At that time, and without any authority from the patentee, the Polytechnic Institution took up the subject as an advantageous one to give lectures upon; and Mr. Goddard, a chemist in the employment of the Institution, explained every day the process to visitors, illustrating it by taking Daguerreotype pictures of a white bust before the audience.

Then, without a license, and in defiance of the patentee, Mr. Beard, having bought an American invention by which, substituting a large concave mirror for the object glass of Daguerre, found it was possible to operate upon a very small plate placed in the focus of the mirror, with a greater rapidity than by Daguerre's plan. Beard was allowed by the Polytechnic Institution to erect on the top of the building a glass room, and he began to take portraits by the said American photographic process. He intentionally dropped, the name "Daguerreotype." You recollect the success and popularity of the process.

In the mean time, wishing to work out my license, I treated with the proprietors of the Adelaide Gallery, and I erected on the top of the building a glass room and all that was necessary; but I could not use the patented mirror, so that I was obliged to do the best I could with Daguerre's slow object glass. I went on so during 1840.

Early in 1841 I communicated to the Royal Society my discovery that chloride of iodine and chloride of bromine added to the preparation of Daguerre (iodide of silver) was capable of rendering the original process one hundred times more sensitive, and from that moment I obtained instantaneous Daguerreotype pictures—as much so as with the present process of photography. My discovery made a great sensation in France, and every one took up the process, for which I had not taken out a patent.

But I must not omit to state that Goddard had made some experiments on the application of bromine, and that before my paper was read at the Royal Society, it appears he had sent to the Royal Society a sealed paper in which he had described the accelerative property of bromine. I believe that it was so; but my discovery was the only one (being published and public) by which the photographic world could practice a very quick process; and, in publishing it to the Royal Society, I gave all the information and directions necessary to practice it.

Not long after Beard had taken up the American photographic process, Daguerre instructed his agent in London to find a buyer for his English patent. By my license he was bound to give me the option of refusal. My partner not understanding the future of photography, would not consent to our buying the whole patent for £800, which was the price asked by Daguerre. I was obliged to decline the offer; and Daguerre's agent having made known to Beard the terms of the purchase of the patent, the latter wide-awake speculator was too glad to accept the offer, particularly, thinking that in buying the patent he could withdraw my license. This gave rise to a very long and expensive action in Chancery, which was at last decided in my favor, and Beard had to pay the whole expense.

During the year after Beard had bought the patent, he sold licenses to all country towns to the amount of £36,000!! This I know as certain from Johnson, who was interested with Beard, having sold him part of his patent for the concave mirror, of which Johnson was the inventor. I have told you more than you probably wanted, but I could not help giving you the whole story. A. CLAUDET.

Card-Board for Printing.

"I take a log of wood of any suitable description, and cut it by machinery into thin sheets or lamine, in a well-known manner, after which they may be bleached or not, as desired. I then paste two of these sheets together, the direction of the grain of the upper sheet crossing that of the lower sheet, and submit them to heavy pressure by passing them between rolls, thus destroying the rigidity and condensing the fibers and closely uniting the two sheet together so as to avoid any liability of bending, twisting, or breaking the strip, and leaving its upper and lower surface with a smooth, hard finish, suitable to print upon. The strip may now be cut up into cards of the required size. If a highly-polished or artificial surface is required, it is simply necessary to apply an enamel of the required color, in a manner similar to that put on to ordinary cardboard. Cards made as above described, ready to be printed upon, may be furnished at about one eighth the cost of those made from the materials heretofore used for the same purpose." Patent of Abbot R. Davis, of East Cambridge, Mass.

The Imitations of Luxuries and their Deleterious Effects.

He who does not see his coffee ground from the bean or berry, may be almost positive that he is drinking from year to year a surrogate in liquid form. In England, as a rule, the grocers sell only ground coffee; therefore one is not surprised to see in the pantries of the housekeeper, in the windows of the victualler, or in the apartment of the single mechanic, where a spirit lamp does the cooking, packages bearing inscriptions and vignettes on handsomely prepared envelopes of the article; but the lord drinks chiccory in his "Finest Mocha Coffee," as well as the lumbler citizen in his "Fine Java Coffee" or the plain mechanic in his "Delicious Family Coffee." If only the chiccory were genuine, the damage would be considerable, though much less than it now is. Chiccory is now prepared, to our certain knowledge, of oak bark, of old coffee grounds, of finely sifted coal ashes, or else with the sawdust falling from mahogany and walnut woods, as well as with iron black and ground horse leathers; these are a few of the elegantly prepared articles sold under the name of "coffee."

German coffee very often consists of roasted barley grounds, or rather malt, after it has been exhausted at the breweries. In the same form with the coffee in England, is the sugar purchased in Germany, viz., finely ground, but "Heaven save the mark!" such sugar! In over ninety per cent of all the shops, the sugar, or some grades of it, is falsified and poisonous. The articles used are sugar of milk, starch, sand, plaster of Paris, etc. An inferior article of beet sugar is also used to impart the sweetness necessary to the materials used for imitating loaf sugar, and the latter has been known to be prepared of acetate of lead, sulphuric acid, old paper, wool, flax, and even common rags, ground up, and impregnated with white sugar: and thus has elegant lump sugar been established by chemists as a more ingenious than genuine article of food. The so-called "pulverized sugar" is often impregnated with dried and ground mushrooms, or even ground butterflies of the miller and moth species, and, in fact, *anything white.*

Wine is a cheering balm to the human heart, but what is wine? The manufacture of wine is no simple process—oh, no! it has become an industry with thousands of "recipes and formulas." In England, wines are prepared of mangel wurzel, plums and raspberries; and rose leaves and rain water assist in the preparation of expensive, and therefore fine "Madeira."

Wine is now made in Germany, for exportation, which contains not one drop of grape juice. The potato has supplanted the fruit of the vine. The sirup (?) or strength of the potato is distilled, and by the assistance of other materials, color, consistency, and smell are imparted, to form a liquor rivaling the choicest vintages. Such a wine can of course have no tartaric acid in its composition, cream of tartar is added in quantities sufficient to produce all the flavor of the genuine article. This, of course, must be done in the manufacture of clarets, other red wines, and champagnes. Wines called "champagnes" are, to our certain knowledge, prepared of honey, chalk, pigeon dung, and even worse materials, and then drank by admiring *bon vivants*, at extravagant prices.

The world at large is flooded with advertisements of quack doctors, who profess to cure anything and everything; and more medicine is taken into the system which is in itself pernicious, than even the proportion of adulterated articles of diet sold by the grocer. In many cases these so-called medicines are composed of filthy and injurious ingredients, which even in health are poisonous, and in sickness worse than useless. This is particularly the case among the middle and lower classes of Europe, who, from ignorance and poverty, readily fall into the snare laid for them by these unscrupulous scoundrels.

With all this before us, we are led to the reflection that the attention bestowed by governments to the food and health of their respective populations, are altogether in the wrong direction. Strict inquiries are instituted, and strict penalties await the unfortunates who in weight or measure fall below the standard established by government. Infringement of trade marks on nostrums, etc., are protected, but when did any government think of establishing any supervision over the *quality* of the food sold to its subjects, for which they are required to pay the price of the genuine article, receiving poison therefor, which destroys health and shortens life, and rapidly enriches the unprincipled manufacturer? Chemical analyses and investigations should be instituted in all such instances, and the health and life of the people should be protected by the government.—*Journal of Chemistry.*

Cancer Salve.

Mr. G. W. C. Gamble, of Millersburg, Iowa, has lately obtained a patent for a salve which he says will cure cancer, made as follows:—

Take ashes of red oak bark, the bark being either in a green or dry state, in quantity, twenty pounds; the ashes of

the root known as "bitter sweet," with its bark either green or dry, five pounds; also, of green poke root mashed fine, five pounds. In preparing the compound, take a wooden vessel of suitable size, with perforations at the bottom, being such as is used to run off common ash lye. Into this vessel put about five pounds of the ashes of red oak bark and of bitter sweet, when mixed in the proportions above mentioned; then add five pounds of the mashed poke root, with the remaining portion of the ashes of red oak and bitter sweet. To this mixture add sufficient water to moisten it without dripping. Let the mixture stand twenty-four hours. Then run it off by adding water until the strength of the ashes is exhausted. The extract will now be put in a metal vessel and boiled to the consistency of salve. Put in bottles with ground glass stoppers, and it is ready for use.

Fabric for the Manufacture of Hats, Caps, etc.

Treflé Garceau and Edward de la Granja, of Boston, Mass., have obtained a patent as follows: "We dissolve india-rubber in ether, and melt paraffine by the application of heat until both are in a condition which admits of their being kneaded with paper pulp into one homogeneous compound. We then take from two to twenty parts of the dissolved india-rubber, from one to five parts of paraffine, and one hundred parts of paper pulp, and thoroughly mix them by kneading or heating, until the whole mass assumes a uniform consistency and becomes homogeneous in character. In the manufacture of the articles above enumerated, the composition which we have described may be used either alone or in conjunction with some textile fabric, such as stiff muslin, long lawn, cotton or linen cloth, etc., etc. If used in connection with the cloth, it may be spread or rolled upon the cloth by means of an ordinary roller, rolling press, or machine, and may be prepared in this manner in slabs or smooth boards, of any desired dimensions. Having thus prepared the material, we next proceed to color it as the fancy may suggest. It will receive the most delicate shades and tints, as well as the most brilliant colors, and may be beautifully embellished with designs of fruits, flowers, leaves, insects, etc. From the material thus fully prepared, we manufacture hats, caps, and bonnets by compressing it to the proper shape in molds constructed in different fashions, so as to imitate silks, woolens, plaited straw, or any other material usually employed in the manufacture of such articles. Neckties, ribbons, etc., may be made from it in a similar way, cutting and stamping them out with dies so constructed that when the articles are finished they are a perfect imitation of silks, woolens, liner, or any other material used in the manufacture of these and similar articles."

Tinning the Interior of Lead Pipes.

It is well known that lead pipe is injurious to water, particularly in certain localities. To avoid this, the interior of the pipe has been tinned during the process of manufacture, either by pouring through it melted tin, or by dipping said pipe in a bath of tin, and allowing the melted metal to run through the tube. In all cases where the coating of tin is not perfect, the exposed surface of lead is much more likely to oxidize than it would be if portions of the lead were not covered; hence the coating of the interior of lead pipe with melted tin has been unreliable and not generally practised. The nature of the said invention consists in a mode of applying to the interior of the lead pipe a flux that will protect the lead from oxidation, and insure a perfect coating of tin when the tin is poured through said pipe, or the pipe dipped into the bath of tin. After the lead pipe has been made, place the same in a vertical or nearly vertical position, and pass down through the same a strong cord, to which a weight is attached to draw the cord through the pipe, and at or near the other end of the cord, a sponge, or piece of other porous elastic material, is attached, of a size to fill the pipe, and of any desired length, say six inches, more or less. The flux employed is either grease or muriate of zinc, but any other flux may be used. The sponge or porous wad being saturated with this flux, is drawn through the pipe, and by its length insures the covering of the entire surface of the inside of said pipe with the flux, so that the melted tin, subsequently applied, will be sure to adhere to all parts with uniformity and firmness. Patented by Peter Naylor, of New York city.

The occasional cleaning of files in the machine shop by means of oil, heat, and the card will save dollars to the owner and annoyance to the worker.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

There seems to be some secret connected with the manufacture of large glass plates, which is known only in certain establishments in France. To make plates of such enormous size as these works send out, free from cloudy spots, perfectly transparent and homogeneous throughout, is an operation which is the result of expert manipulation, as well as the addition of ingredients not commonly known to the trade. A single plate of glass just imported from France is 20 feet long by 16 feet, 8 inches wide. Its use is not as a window, but to represent under a strong light a frozen lake in one of the scenes of a popular spectacular play of the day.

The chemical establishments of Philadelphia represent a capital of two and a half millions of dollars, and manufacture much the largest proportions of the best chemicals used in the United States. Some idea of their extent and importance may be derived from the fact that they consume 4,400 tuns of sulphur, 1,000,000 lbs. of saltpeter, 3,000 tuns of salt, and produce daily of sulphuric acid 150,000 lbs., or over 45,000,000 lbs. every year; of alum, 20,000 lbs. daily; of muriatic acid, 20,000 lbs.; of nitric acid, 10,000 lbs.; of copperas, 15,000 lbs. daily; of nitrate of silver, 180,000 ounces annually, and additionally thereto, a long list of medicinal preparations.

The railway rolling stock of Great Britain, if ranged in line, would be headed by about 50 miles of locomotives and tenders, about 100 miles of carriages, and 850 miles of freight, gravel, cattle and miscellaneous cars. On the British railroads last year, the amount expended upon locomotive power was 27·96 per cent of the working expenditure. For maintenance of way and works the expense was 18·43 per cent of the working expenditure; for repairs on cars, 8·18 per cent. The total expenditure under all heads was 49 per cent.

In the corresponding column on page 106, current volume, we spoke of the broad-gage extension scheme to Chicago of the Erie railroad. The Atlantic and Great Western broad gage, which intersects the Erie at Salamanca, N. Y., was to be tapped at Akron, Ohio, and a new line was to be built between this point and Toledo, a distance of seventy-eight miles. An extra rail along the Michigan Southern and Northern Indiana road would complete the broad-gage through to Chicago. Steel rails were to be used in constructing the new portion of the line, and according to one statement, the building contract was already let out. To pay the pressing indebtedness of the Erie company, and the cost of the new section, $8,000,000 worth of stock was issued, and this furnishes the bone of contention in the present existing railroad war, the real object of the anti-Erie party being to prevent the building of the Akron-Toledo connection.

It is appears from the report to the Massachusetts Legislature of the Hoosac tunnel commissioners, that had a railway been laid for only eight miles up Deerfield river, to a vast lumber region at that point, the saving in the cost of lumber and supplies thus made would have paid the whole cost of the road. The progress in boring last year, with the Burleigh machine, was highly satisfactory. By the aid of nitro-glycerin, one hundred and fifty feet may now be accomplished every month. On the whole, the commissioners have confidence in the future rapid progress of this "great bore of the Commonwealth;" and the Chief Engineer having examined the Mount Cenis tunnel, asserts that the machinery employed on the Hoosac is superior to that used in the European works.

Anthracite iron was first used in this country about the year 1837. Last year the production of the whole country was 784,783 tuns, the State of Pennsylvania alone producing 586,584 net tuns. The production of raw coal and coke pig iron last year was 318,647 tuns, sustaining the average steady gain in this branch of industry exhibited for the past fourteen years. In New England, the expansion of the charcoal pig iron manufacture, for a number of years, has been prevented by the scarcity of timber, and many furnaces, owing to this cause, had been abandoned. In New York, a falling off, as compared with 1854, of about 8,000 tuns, is noted for last year; the make steadily declining until that year, but since then regularly advancing. In Pennsylvania, the number of charcoal furnaces reached its maximum—170—in 1847, since which time the number annually abandoned have largely exceeded those erected. But little charcoal pig is now made in Pennsylvania west of the mountains. In the later-settled States, Ohio, Missouri, Michigan, this industry is still active. The total quantity of pig iron made in the United States last year, was for anthracite, 784,783 tuns; raw bituminous and coke, 318,647 tuns; for charcoal iron, 344,341; total, 1,447,771 tuns.

In crossing the mountains in Pennsylvania, the highest elevation overcome by a locomotive railroad in a single rise, is on the Delaware, Lackawanna, and Western company's line, from the Delaware river, where it is 288 feet above tide level, to Pokono summit, at an elevation of 1,969 feet, making the altitude surmounted 1,681 feet. Scranton City is 839 feet above tide, and 1,249 feet below the summit on the Delaware and Hudson Canal company's railroad. The summit on the two Lehigh companies' road, near Wilkes Barre is 1,630 feet above sea level; the latter place is at an altitude of 537 feet; the difference of elevation is 1,103 feet, which is accomplished on a grade of 96 feet per mile.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

Apparatus for Warming and Ventilating Buildings.—James Whitehill, Frederick, Md.—This invention consists, first, in an improved attachment to be used in connection with the furnace patented Nov. 8th, 1859; and, secondly, in so connecting the hot and cold air flues, and employing a fan in combination with them, that the building can be quickly emptied of its cold air while being filled with warm air, and that the supply of cold and warm air can be so adjusted that the temperature of the building can be perfectly regulated and controlled at all times.

Invalid Bedstead.—W. W. Rowles and A. J. Russell, Baltimore, Md.—This invention is an apparatus which may be attached to any bedstead, and by means of which a sick person may be gently raised and removed from the bed and returned to it again, without being caused any pain, when it is necessary that the bed should be made, or the clothes changed.

Lock.—S. W. Drowne, Norwich, Conn.—This invention relates to latch locks more particularly, and consists principally in a novel arrangement of the latch-bolt and locking mechanism, whereby the latch-bolt can be so locked that it cannot be operated by the handle or knob-spindle, but yet it is free to play when the door is closed.

Napkin Ring and Salt Cup.—George Pine, Trenton, N. J.—This invention relates to a new napkin ring or holder, which is combined with a salt cup in such a manner that each person at table can have his or her own salt cup, thereby doing away with the necessity of taking salt from a common salt-cellar.

Meal and Chop Dryer and Cooler.—H. H. Bingham and J. C. Hunt, Terre Haute, Ind.—This invention relates to a new device for drying and cooling meal and chop, and consists in the use of an inclined polygonal reel, which is open at both ends, and into the higher end of which the meal or chop, as it comes from the mill, is fed.

Lampblack Apparatus.—Mahlon Matlack, Bridesburgh, Pa.—This invention relates to a new machine for producing lampblack from suitable material, and consists in the construction and arrangement of the furnace and of the detaining devices, by which the lampblack is separated from the gases, and of the roof of the structure, all parts being so arranged that the operation of the apparatus will be complete, that no lampblack will be allowed to escape with the gases, that no explosive gases can accumulate in any portion of the apparatus, and that the fire cannot reach any combustible portion of the apparatus.

Weeding Tool.—Nelson Webster, Plainfield, N. J.—This invention consists chiefly in combining a hoe with a rake in such a manner that when the hoe is pushed forward through the weeds the teeth of the rake will separate and sever the weeds, so that they will be made thoroughly innocuous.

Piston Packing.—Julius King, Hoboken, N. J.—This invention relates to a new piston packing, of that class in which metallic packing rings are used, and consists in the use of packing rings which are arranged around the piston, but which are not cut. Each ring is connected with the piston by means of a screw-bolt, or other equivalent device, by which the ring may be drawn toward the piston.

Weeding Machine.—Nicolaus and Charles Carstens, New York city.—This invention relates to a new machine for removing and destroying weeds from walks and other places, and consists in the application of a revolving rake in rear of the weeding tool, for the purpose of throwing around and separating the weeds that were cut off by the tool, and to deposit them upon the ground or into a box, so that they cannot grow again.

Carriage Hub.—Jno. W. Miner and David P. Ward, New Bedford, Mass.—This invention relates to a new and improved method of constructing hubs for the wheels of carriages, whereby the spokes are more easily and more firmly secured to the same, and the spokes are less liable to be injured by the jar, and, also, one or more spokes may at any time be removed and replaced without cutting the tire.

Hair Picking Machine.—Ph. Wisdom, New York city.—This invention relates to a new machine for picking hair from hair ropes. The horse hair to be used for upholstering and other purpose is twisted into a rope, so that it will become curled, which rope may, if desired, be turned into a coil, so as to increase the curls in the hair. The hair has then to be picked from the ropes, so as to become perfectly separated and ready for the market. To pick the hair from such hair ropes is the object of this invention.

Furniture Edge.—Franz Hiltwohl, New York city.—This invention relates to a new mode of arranging the edges of upholstered furniture seats and backs, and consists in forming as an independent article of manufacture a stuffed roll of horse hair, moss, or other suitable material, covered with canvas, which is arranged with its threads diagonally across the roll, so that the latter can be bent into all curves or corners that may have to be formed on the seat or back of the furniture.

Oil Injector.—John Nation, Portland, Oregon.—This invention consists in admitting oil or tallow into a proper receptacle, and in applying steam to force the oil or tallow into the steam cylinder chest, or steam cylinder.

Wood Molding Machine.—James J. Russ, Worcester, Mass.—This invention consists it so hanging a frame in which are arranged the feed rollers of the molding machine to the supporting framework of the machine, that such frame can be raised or lowered at pleasure, according as may be necessary for properly adjusting the feed rollers for action upon the "stuff," and also in so constructing such frame case as to permit the feed rollers to yield in case there should be variations in the thickness of the "stuff" passing under the same. Second, in hanging the spindle of the side cutter-heads to and in a vertical frame of suitable shape, arranged to be moved up and down, and also laterally, for adjusting the cutter-head fraction, and at its upper end provided with the box or bearing of the said spindle, whereby while the side cutter-head is susceptible of adjustment for action upon the stuff, the bearing of the box is always upon the spindle, in lieu of, at different points of the same, as with the arrangement of the parts heretofore employed, which produces an uneven wear. Third, in forming the bed to the machine the surface or molder cutter-head acts with a series of slots or openings, extending in the direction of the movement of the stuff, having bridge bars, so as to allow the cutters to act upon the edges of the stuff, without danger of striking the bed, and thus being injured. Fourth, in hanging the bar carrying the presser shoe, that is arranged for pressing upon the stuff just in advance of the point of action therein by the molding cutter-head, in such manner to the frame work of the machine that through such frame it can be adjusted in hight for a more perfect action of its presser shoe upon the stuff, and to yield should there be any variations in the thickness of the stuff passing through the machine. Fifth, in a novel constructed clamp for holding the press-block, that is located for action upon the stuff, after having been cut by the molding cutter. Sixth, in the arrangement in connection with the pulley drums, of the spindle to the side cutter-heads of a loose pulley, by means of which the two cutter-heads can be driven with one belt, and both made to turn in the same direction. Seventh, providing the springs in the bed plate through which the side cutter-heads are arranged to move in a lateral or transverse direction, with a bridge plate or plates, susceptible of adjustment independent of the cutter-heads, whereby an adjustable support to the stuff is given, as it passes over the line of such openings.

Rudders.—H. H. Pember, New York city.—This invention relates to a mode of hanging rudders to vessels, whereby a rudder may be unshipped and shipped with far greater facility than hitherto, so much so as to admit of a rudder, in case of being damaged and rendered unserviceable at sea, being unshipped and drawn directly up through the rudder post upon deck, without the trouble and danger of lowering a boat and making chain or rope connections with a view of drawing the rudder up at the outer side of the vessel. Besides this advantage the invention admits of the rudder being unshipped without being lowered, the necessity of which requires the vessel to be in deep water in order that the rudder stem may be drawn down and cut from the rudder post; and hence when a vessel lying in port requires to have its rudder unshipped for repairs, it is very often necessary to draw off into deep water in order to accomplish that end.

Machine for Boring Post Holes.—James K. Miller, New York city.—This invention relates to a machine for boring holes in the earth to receive posts, more especially fence posts. The invention consists in a novel means for rotating the borer and elevating the same, and in a means employed for adjusting the machine in a horizontal position on uneven or inclined ground so as to insure the holes being bored vertically into the earth.

Hanging Balanced Window Sashes and Roller Window Blinds or Shades.—Thomas Bullivant, London, England.—This invention relates to a mode of hanging balanced window sashes, whereby the latter may be taken from the window frame with the greatest facility for the purpose of cleaning, glazing, painting, etc., and the sashes also fitted in the window frame without any difficulty whatever. The invention also relates to a mode of hanging and arranging the blind, or shade in the window frame, whereby the former, when raised or not in use, is protected from dust or dirt.

Stovepipe.—Aaron Colton, Sycamore, Ill.—This invention consists in counterpoising or balancing a damper for stovepipes in such a manner that the damper will be self-regulating—closing as the draft of the stove increases and opening as the draft diminishes so as to insure a steady or uniform combustion of the fuel at all times.

Corn Planter.—R. S. Edwards, Savannah, Mo.—This invention consists in a seed-distributing apparatus and in the general construction of the machine, whereby the seed may be dropped with certainty and evenly in check rows, and the machine readily manipulated and all the working parts put under the complete control of the driver or operator.

Casting Plowshare.—Jonathan Hunton, Hackensack, N. J.—This invention is designed to admit of casting, with a chilled mold, those plowshares which are provided with a leg or projection to fit into a staple or socket on the moldboard, and which are also provided with a pendant land side projection having an oblique position relatively with the upper surface of the share. Shares of this kind have hitherto been cast in sand molds for the reason that they could not be drawn from cast-iron ones, and consequently the advantage of a chill has hitherto been lost in casting them.

Writing Pen.—Robert Hirst, Hudson, N. Y.—This invention relates to an attachment for writing pens for the purpose of retaining or holding a larger quantity of ink than can be retained by the ordinary simple pen.

Cultivator.—Benjamin Anyan, Fitchville, Ohio.—This invention relates to a cultivator for cultivating plants grown in hills or drills, and it consists in a novel construction of the same, whereby the device may be applied to the front axle of any ordinary farm wagon.

Grain and Grass Harvester.—D. H. Thayer, Ludlowville, N. Y.—This invention relates to a means employed for forming a connection between the wheels of a grain and grass harvester and axle. The invention is designed as an improvement over the ordinary pawl and ratchet now generally used to cause the wheels to turn the axle and answer as a shaft to drive the sickle when the machine is drawn forward, and admit of the wheels turning loosely independent of the axle when the machine is backed, so that the sickle will be inoperative under a retrograde movement of the machine.

Water Wheel.—I. M. Thompson, Edinburgh, Ind.—This invention relates to a water wheel of that class which are fitted or placed on a vertical shaft and rotate in a horizontal plane. The invention consists in combining two wheels in one and providing each with a series of gates arranged in such a manner that both sets of gates may be operated, opened and closed, simultaneously by a single manipulation on the part of the operator, all being constructed and arranged in such a manner that a large percentage of the power of the water is obtained.

Cultivator and Gang Plow.—Isaac B. Mahon, Dunkirk, Ohio.—This invention relates to a cultivator and gang plow and is an improvement on a cultivator patented Sept. 17, 1867. The object of the present invention is to render the previous patented invention susceptible of being adapted as a gang plow and to economize in the construction of the machine generally and to render it more strong and durable.

Refining Glycerin.—Otto Laist, Cincinnati, Ohio.—This invention relates to a new and improved method of refining glycerin whereby it is rendered inodorous and colorless and with less time and expense than by methods heretofore used. The process consists in distilling the crude glycerin in a retort or still in which is placed any suitable fatty body as animal or vegetable oils or any oleaginous acids as margic or stearic acids and the like.

Hay Fork or Harpoon.—J. W. Summers, Sandy Hill, N. Y.—This invention consists of a simple and effective arrangement of parts which produce a cheap and effective hay fork.

Pocket Knife.—John Mosley, New Haven, Conn.—This invention relates to certain improvements in pocket knives, whereby the same are made exceedingly strong and durable. It consists in forming the handle of the knife in one piece and forming the springs with a recess to fit upon a projection in the bottom of the handle thus dispensing with the rivets heretofore required to hold the springs and handle together. The handle may be cast in one or two pieces, and thus formed and fitted with the springs and blades, constitute a strong and durable knife, capable of withstanding the severest usage without becoming loose.

HANDLES FOR AWLS, ETC.—D. R. Wight, Sturbridge, Mass.—This invention relates to a new improvement in the construction of handles for awls, and other similar tools.

STEAM ENGINE VALVE.—W. R. Thomas, and Thomas Evans, Catasauqua, Pa.—This invention consists in operating two piston valves on one rod, in a cylindrical steam chest by arms on the piston rod of the engine.

STAVE SAWING MACHINE.—William R. Bishop, and Oriel D. Bishop, Harrison, Wis.—This invention relates to a machine for sawing staves for barrels and other articles of a similar construction.

APPARATUS FOR REGULATING THE POSITION AND MOVEMENT OF THE ARMS OF VIOLIN PLAYERS.—Edward Mullenhauer, New York city.—This invention relates to a device for attaching to the person of a violin player for the purpose of regulating the position and movement of the arms when playing on that instrument.

CURTAIN CORD FASTENING.—Thomas Curley, Troy, N. Y.—This invention has for its object to furnish a more simple, cheap, and convenient fastening for window shades or curtains, than has hitherto been in use.

SHOE KNIFE.—N. M. Ray, Ellsworth, Me.—This invention consists in securing to the end of the knife blade a detachable cap, or guard, whereby the upper leather of a boot or shoe is secured from injury in the process of paring the sole.

FIRE-CRACKER PISTOL.—J. W. Bailey, New Orleans, La.—This invention relates to a device for applying the present popular breech-loading principle to the explosion of fire-crackers, whereby the accidents which not unfrequently happen from such explosions are avoided.

GANG PLOW.—John L. Keasor, Laconia, N. H.—This invention has for its object to furnish an improved gang plow, simple in construction, easy of adjustment, and which at the same time will be held securely and loosely when at work.

TELEGRAPH INSULATOR.—J. L. Finn, Elyria, Ohio.—This invention consists of an improved telegraph insulator and lightning arrester, and its objects are to provide a more effectual mode of insulating telegraph wires, and to collect and arrest the free electricity pervading the wires, and convey it harmlessly into the ground.

IRON HEATER.—S. W. Smith, Addison, Vt.—This invention consists in combining and arranging circular plates of such form as to leave a chamber between them for the flat irons, and so that while the irons are heating they are excluded from the atmosphere, and no part but the handles exposed.

WATER HEATER.—John Marshall, Hartland, Mich.—The object of this invention is to provide simple and efficient means for heating water or other liquids, in wooden vessels, for washing clothes or other purposes, and it consists in producing a circulation of water between the tub, barrel, or other vessel, and an annular heater by a divided tube.

AIR BRAKE FOR CARS.—Auguste De Bergue, Paris, France.—The object of this invention is to arrest the motion of railway cars by the resistance offered to the steam pistons by compressed air, or the friction of ordinary brakes actuated by compressed air. The invention consists in providing an adit or air passage for admitting air to the piston when the latter is in motion, whereby the air is drawn into the cylinder at each stroke of the piston, and forced into a reservoir where its accumulating tension finally absorbs the momentum of the train by acting against the pistons at each stroke of the latter.

INSTRUMENT FOR MEASURING DISTANCE.—George Achelis and Hermann Poppenhusen, New York city.—This invention is designed for the use of artists and students of nature and art, to enable them to transfer to a drawing approximate proportions and distances of objects in a landscape with greater accuracy than is possible with the unaided observation of the eye.

SADDLE AND HARNESS.—R. M. La Rue, Andersonville, Ind.—This invention relates to an improvement in saddles and harnesses, and consists in having a small drum or ratchet to which the crupper or other strap is fastened.

MEAT BROILER.—Lewis Holmes, Keene, N. H.—This invention relates to a new and improved method of constructing broilers for the broiling of meat, whereby the same is more quickly done, without the escaping of unpleasant odors into the room.

CHURN.—Henry C. Bell, Heyworth, Ill.—This invention has for its object to furnish an improved churn, simple in construction, easily operated, and which will develop all the butter that may be in the milk in a very short time.

BROOM HANDLE LATHE.—Edwin Williams, Rowlesburgh, W. Va.—This invention has for its object to improve the construction of Peter Prescott's broom-handle lathe, patented Oct. 8, 1861, so as to make it more satisfactory and effective in operation.

LAP JOINT FOR BELTING.—Henry Underwood, New York city.—The object of this invention is to furnish an improved lap joint by the use of which a belt of nearly uniform thickness and strength may be produced, and at the same time the amount of stock used may be economized.

SEWING MACHINE.—Dr. W. St. G. Elliott, Morristown, N. J.—The improvements in sewing machines embraced in this invention principally consist, first, in so arranging a feed mechanism and applying it to the sewing machine in proper position to act upon the cloth or other material being sewed, that such feed can be readily brought into position for feeding the cloth or other material to be sewed in any direction or along any line desired, and without requiring the machine to be stopped. Second, in so arranging a frame or carriage for the shuttle or under thread carrier that it can be slid across the plane of movement of the needle, whereby it can be adapted in position for any of the under thread carriers.

CULTIVATOR AND SEEDER.—Lewis Bishop Talladega, Ala.—This invention consists in the adaptation of springs to the wheels of cultivators, whereby the inequalities of the soil will be passed over with facility, and other devices tending to perform in a more perfect manner the operations of seeding, planting, and chopping out cotton stalks.

BREAD MAKING MACHINE.—Marcus A. Jones, Frankfort, Ky.—This invention consists of a pair of rollers operating within a tray which covers a chest of sliding bottoms, the successive withdrawal of which accomplishes the manipulation of the dough and leaves it in the pans ready for the oven.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at $1 00 a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

B. F. W., of Tenn.—The specimen which you sent to this office is not an "ore," as you think, but a variety of clay very strongly impregnated with the red (hydrated) oxide of iron. The other chemical components are chiefly silica and alumina. Though useless as an ore this substance is perhaps applicable as a coloring material.

W. A. E. R., of Ohio.—"Does the sun's light reach the earth's atmosphere in one beam?" The sun's light consists of rays which are emitted from its surface in all directions. A number of these rays which, to all intents and purposes, are parallel, is called a beam. If they are so far apart that they cease to be practically parallel we cannot speak of them as being in one beam. You will perceive that the term "beam" is therefore to a certain degree conventional and does not denote a fixed number of rays.

S. M. W., of N. Y.—The cocoa nut oil or cocoa butter is extracted from the kernels of the cocoanut. The natives of Ceylon and Madagascar gain it either directly by pressure or by boiling the kernels in water and skimming the oil off as it rises to the surface. In Europe heat and pressure are likewise resorted to, and the consistency of the oil—which is a mixture of a fluid and a solid fat—varies as these elements in its production.

A. J. F., of Vt.—We suppose that the best process for converting cast iron into steel in your instance is that of "case hardening," which consists in heating the articles to a bright red heat and then sprinkling them with finely powdered ferrocyanide of potash or soda. We are not aware of any difficulty in the way of converting cast iron into steel because the former has been chilled before the operation.

F. B., of Pa.—The only purification to which plumbago is usually subjected is pulverization and washing with water to separate it from its grosser and heavier impurities. We are not aware of any particular machines having been devised for this process.

J. H. C., of N. Y., propounds the old question: "Why is it that earth taken from a hole with pick and bar will not fill it when returned, when slightly tamped?" One reason is that the tamping, however "slight" it may appear to the observer, may still be sufficient to render the earth more compact than it was before excavation. Beside this, it is well known that the ground is always moist on account of the water which circulates through it; when a portion of it is removed and exposed to the atmosphere this water evaporates and causes a shrinkage of the original volume.

E. J., of Rockville.—Load stones are never used now-a-days for the production of magnets; electro-magnetism is now generally used for this purpose. The bar to be magnetized is armed with a piece of soft iron on each end and placed for a short time into the interior of an electro-magnetic helix, wound up on pasteboard, while an electric current passes through it at the same time. The details of this and of other processes for making magnets, can be found in any larger treatise on electricity. As regards the prices you had better address yourself directly to some firm dealing in these articles.

E. O. McC.—"Why do drills become magnetized?" We are unable to say. It is well known that the drills used in an upright boring machine acquire the property of magnetic attraction sooner than those used on a horizontal lathe. Fire irons, as tongs, shovels, pokers, etc., also acquire the property in time. The reason why, is yet among other inexplicable mysteries.

J. S. W., of N. C.—"The best way of keeping furs and undressed hides during the summer months?" Carbolic acid preparations are probably the best. A company in this city manufacture an article expressly for this purpose.

Inquirer.—"Please explain how it is that the radical of ammonia can be an element." We are not aware that this radical has ever been considered an element by any chemist.

W. C. P., of Pa.—"How much does a bar of railroad iron expand during the heat of summer, and how far apart should the rails be laid to allow for contraction and expansion by the differing temperature of the atmosphere?" One mile of rail will expand or contract between the temperatures of 4° Fah. and 100° Fah., 67 inches, according to Silliman. From this datum our correspondent can easily calculate the expansion of a single rail of 18 feet length. For more specific information he had better apply to some section contractor, as the condition of the road—whether passing through forests and deep cuts, or over exposed plains—materially alters the circumstances.

G. S., of ——.—See page 183 of current volume in the answer to "J. F. G., of Ohio," for a reply to your question as to the preparation of canvas for painting. Read the paper weekly and it will save you the trouble of repeating such inquiries.

L. G. G., of N. C., wants some information as to the injurious effects of burning oak instead of pine wood in a stove. He is told oak is destructive to the iron. All, or nearly all, woods yield an acid by destructive distillation or slow combustion; oak and other hard woods more than pine. This acid is injurious to iron, corroding it rapidly, especially if the wood be green. If well seasoned and the stove has a good draft no difficulty need be apprehended.

W. D. H., of La., asks how to restore linseed and nut oils after they have become thick and gummy. Perhaps some of our correspondents can answer.

W. H. G., of Pa., desires to know the melting point of the composition known as Babbitt metal. We cannot tell, but it may be melted like lead in an ordinary iron ladle over an open fire. He asks also if there is a better anti-friction metal. There is, and it is known as the "Star Metal," and manufactured by the Star Metal Co., 55 Liberty street, New York city. "What substance beside oil is used as a lubricant?" The stern post bearings of propellers are lubricated with water; soapy water or water in which soda has been dissolved is often used in machine shops.

G. A. C., of Mass.—"Is there a metal or metallic composition which contracts by heat? What metal expands the least and what the most?" We know of no combination of metals which contract by heat. A composition of lead, 9; antimony, 3; bismuth, 1, expands in cooling. Platinum is the least expansive of the metals and zinc the most.

J. S., of Conn., answers the question of "F. S. B.," on page 183, current volume: "What proportion of water should be used in mixing plaster of paris so that no shrinkage results in setting." He says: Any proportion will prevent shrinkage, as it invariably swells or expands in setting. Different qualities of plaster expand in differing degrees. T. H. C., of Mass., also replies. He says that plaster expands while setting and for some time after. If "F. S. B.," will use lime water to mix his plaster he will not be troubled either with expansion or shrinkage. Sulphate of potash will have the same effect used in the proportion of about half an ounce to a quart of water. It makes it set quicker, but somewhat weakens it.

F. R., of N. Y., whose question in regard to white gunpowder appeared in No. 12, current volume, is answered by a correspondent who says that it is composed of chlorate of potash, 49 parts; ferro-cyanide of potassium, 28 parts; refined sugar, good quality, 23 parts. They should be pulverized and kept separate, and are mixed by sifting the ingredients together. It may be grained like common gunpowder, but the process is always attended with danger. Its explosive force is about five times that of common gunpowder. Its transportation or handling is dangerous.

A. F. T., of Wis.—In reply to your query on page 183, current volume, in relation to indellible pencil marks, W. C. D. of D. C., says; Wet the paper on which pencil marks have been made with milk or saliva and when dry they cannot be removed with rubber.

J. F., of Pa., desires to know how to melt a fragment of flint glass. Put the fragment (small), on a ring or loop made of iron, or, better, of platinum wire, and direct upon it the flame of a spirit lamp or gas burner by means of the blowpipe.

E. M. T., of Ky.—"What is the best mode for producing the electrical light?" Sending a powerful current of electricity through two carbon poles as arranged in electrical lamps, the best of which are those of French construction. You will find full information on the subject of inquiry in every treatise on Physics, which is not of the most elementary kind.

An anonymous correspondent inquires: "After a very cold snap, one in the deep woods will hear the frequent cracking of trees. This is observable only after the weather has begun to moderate and before it reaches the thawing point. Why is this?" The cause is the contraction and subsequent re-expansion of the interior of the trees caused by the changes of temperature. "When I open the door on a cold frosty morning, the steam of the room is suddenly condensed and appears as fog rushing in from the door. Explain the reason," Hot air can take up more moisture than cold air if it is saturated with steam and cooled off by the admission of air from without, part of the water which was held in suspension is precipitated and appears as fog.

M. G., of Mich.—A party is manufacturing light flat barrel hoops. It is desirable to have them less liable to split in driving. Is there any cheap substance suitable for the purpose." We suppose that hoops (wooden), steamed before driving or kept underwater, will preserve their toughness.

H. O. R., of Idaho.—"Why does a cup of tea retain its heat better than coffee? What are their boiling points, respectively?" We are not aware of the truth of your statement. The boiling point of a solution or extract, like tea or coffee, varies with the amount dissolved. The material of the cups affects the rapidity with which their contents cool off; tin cups retain the heat longer than those of porcelain.

G. S. C., of N. J., asks how the wheels of railroad cars act on curves, the wheels, as is well known, being rigidly secured to their axles. To prevent the wheel that runs on the inner rail from slipping too much the faces or treads of the wheels are made slightly convex, the larger diameter being nearest the rim or flange and the rails being made convex on their face.

G. A., of Pa.—"What is the meaning of upward in giving numbers; for instance, 'four hundred and upward,' or, 'upward of four hundred?'" Both mean the same; upward, more, or above four hundred. Such grammatical questions are somewhat out of place in our columns but we admit the queries and give the answer once for all.

W. A. H., of Tenn.—If your "gum" or rubber belt slips on the pulley it should be lightly moistened on the side next the pulley with boiled linseed oil—animal oil will not answer. If one application does not do the business, repeat. Very likely your belt is too slack. It is not economy of power, as you think, to run a loose belt. Would you hitch your oxen or horses to a plow the traces of which alternately contracted and expanded? The flap of your favorite loose belt is the same thing. Do your duty by your belts and they will return you a proportionate amount of service.

B. F. S., of Vt.—"Is there a cement that will mend a marble gravestone which is broken?" Yes; plaster of paris mixed with water to the consistence of cream.

Business and Personal.

The charge for insertion under this head is one dollar a line.

There are now in actual operation eight thousand of Ashcroft's Low-Water Detectors. John Ashcroft, 50 John st., New York.

Henry Carey Baird, Industrial Publisher, 406 Walnut st., Philadelphia, has just issued a new and much enlarged descriptive Catalogue of Practical and Scientific Books, 56 pages, 8vo, now the largest list of this character, comprising only the Publications of any one house in either the United States or Great Britain. It will be sent free of postage to any one who will favor him with his address. Every reader of the Scientific American is invited to send for it.

Coal-oil Works, revolving retorts and refinery, lately erected, for sale. Address, on the premises, John White, Darlington, Beaver Co., Pa., or C. G. Waterbury, 116 Wall st., New York.

$2,500 will buy one-half interest in a business that will pay fifteen thousand dollars a year. Address Steam Mill, Belair, Ga.

Agents wanted. Sample 35c. Smith, Shepard & Co., P. O. Box 867, Waterbury, Conn.

Two Valuable Patents for sale—one for a Fertilizer, and the other for Harness Wardrobe. Address H. E. Pond, Franklin, Mass.

Bartlett's Reversible Sewing Machines are the cheapest reliable Machines. Bartlett Machine and Needle Depot 569 Broadway, N. Y.

Mill-stone Dressing and Glaziers' Diamonds. Also, for all Mechanical purposes. Send stamp for circular. John Dickinson, 64 Nassau st., New York.

For Patent Engine Lathes and Upright Drills, Planer Centers, Lathe Chucks, Planer Chucks, and all kinds of Cutlery Machinery address Thomas Iron Works, Worcester, Mass.

Dutton & Maguire Tube Wells.—Patented in 1865. Illustrated in Scientific American of Aug. 17th, 1867. Unsurpassed by any other well. Works in any place, and where all others have failed. The subscribers are prepared to sell Town, County, and State Rights, or to furnish wells ready to put down, with printed instructions for putting down. Township Rights from $15 to $30, according to size, population, etc. Single wells supplied at a small advance on cost of material. Model furnished to parties purchasing County or State Rights. Send for a circular. Address all communications to Dutton & Maguire, Port Jervis, N. Y.

Incrustations of Boilers removed and prevented by Winans' Boiler Powder. (11 Wall st., N. Y.), 12 years in use, no injury, no foaming.

To insure the safety of your steam boilers, property, and life, apply Ashcroft's Low-water detector. John Ashcroft, 50 John st., N. Y.

Parties having patents of established value for sale, not patented in Europe, will please address D. Miles, 95 Water street, Boston, Mass.

The patent ribbed surface shingle is being universally adopted. Machines, with full rights to make and sell this valuable improvement, can be rented or leased, per agreement. Full particulars, with sample, sent free. Address F. A. Luckenbach, sole assignee, Philadelphia, Pa.

Don't fool away your time trying to get a cork out of a bottle with a string, when Waterman's patent cork extractor is so cheap. It takes a cork out in an instant. Private families, doctors, apothecaries, beer establishments, and barrooms is where they are in demand. Send 60c. for sample. State Rights for sale. Cork screw and spring all combined. Direct to Wm. G. Waterman, Middletown, Conn., Box 1388.

Portable Picket Fence.—Persons desiring to sell or manufacture a new and practical invention in Fences, are referred to the advertisement of H. A. Stewart in another column.

NEW PUBLICATIONS.

THE PRACTICAL STAIR BUILDER. By C. Edward Loth, Troy, N. Y. A. J. Bicknell, publisher, 283 River street, Troy.

This treatise is a very handsome large quarto volume of over 150 pages. Illustrated with thirty original plates, and adapted not only to architects stair builders, and carpenters, but to students of Geometry. Being the production of a practical man it is less burdened with abstruse problems which are Greek to the uninitiated, than many text books professing to teach. We cordially commend it to the learner and the practical workman.

THE MODERN PRACTICE OF PHOTOGRAPHY is the title of a little book by R. W. Thomas. Published by H. C. Baird, Philadelphia, Pa. Price 75 cents.

ATLANTIC MONTHLY—April. Ticknor & Field, Boston. $4 a year; single numbers 35c. May be had at all the periodical stores.

THE NEW ECLECTIC.—The fourth (April) number of this new magazine is just out. Turnbull & Murdoch, publishers, Baltimore. Price $4 per annum; specimen copies 25c.

PUBLIC SPIRIT.—The publisher, Le Grand Benedict, 37 Park Row, New York, calls his publication a monthly magazine for the million. The cover is very red, and its contents are very good, and we hope he will get his million of subscribers. It may be had of all news dealers for 25 cents a number.

THE BROADWAY MAGAZINE for March, published by Routledge, at 416 Broome street, contains a number of interesting articles, among them one by George Augustus Sala, an Englishman and former correspondent of the *London Times*, who describes, somewhat ironically, the "pleasures and pains" of "Trotting and Sleighing in New York."

WANZER'S HARVESTER PITMAN CONNECTION.

The fact that the velocity of the knives of a harvester necessary to accomplish the best results is governed by the nature of the work and the speed of the team has been made a matter of importance by the improvements in harvesters within the few past years, which enable them to be used where there are obstructions and on uneven ground. As the wear of the machine in a given time is greater with every increase in the speed of the moving parts, various attempts have been made by which each farmer might adapt the vibratory motion of his cutters to suit all circumstances. The device herewith illustrated furnishes a cheap but efficient means for varying the stroke and velocity of the cutters.

Fig. 2

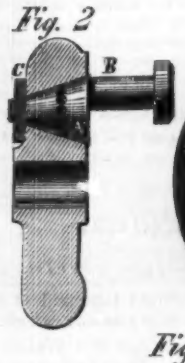


Fig. 1

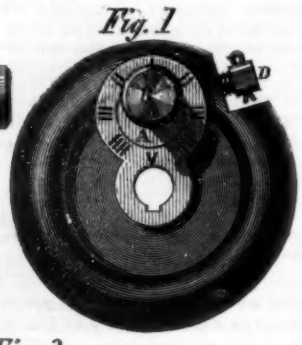
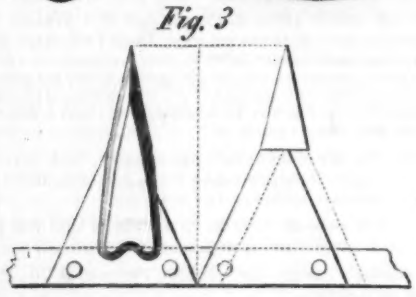


Fig. 3



The part, A, or shank of the wrist pin, B, which enters the wheel, is tapered as shown in Fig. 2, the wrist being placed near the periphery or eccentric to the center of the shank. The projection of the shank on the back of the wheel is square, having a square washer, C, by which the wrist pin and shank can be turned toward or from the center of the wheel, making the stroke shorter or longer, marks on a dial seen in Fig. 1, showing the relative positions of crank pin and center of wheel.

In the conical shank, A, are a series of holes which receive the point of a set screw, D, and serve to hold the wrist pin in place. Fig. 3 shows the position of the knives at the end of the stroke, when it is shortest its length being supposed to be three inches. By moving the knives to the other side of the guard finger, or half an inch further each way from the central dotted line, the length of stroke becomes four inches or is varied in the ratio of three to four. With this device a set of knives can be used a greater length of time than by the ordinary plan and their value will be lessened only by their becoming shorter. The method of fastening the pin may be varied, if desired, but is found that the one herewith illustrated possesses advantages. The conical form of the wrist pin shank secures a perfectly tight bearing. For reaping the stroke may be made shorter than the length of the knife section. thus securing a strong, steady motion of the sickle.

Patented through the Scientific American Patent Agency July 2, 1867, and reissued Nov. 12, 1867, which covers the use of a tapered wrist pin with eccentric projection and an improved plan for connecting the pitman to the cutter bar. For further information address Hiram L. Wanzer, Lanesville, Conn.

Friction Cigar.

Patented by Charles Quartley, of Baltimore, Md. Tobacco, eight pounds; saltpeter, twelve pounds; charcoal, one pound. These ingredients I mix with sufficient dissolved shellac to make a mass of the consistency of stiff paste. When the cigars or cigarettes have been finished in the usual manner, I take them, one at a time, and apply a portion of the above composition evenly over the end of the cigar with a small knife or any other convenient instrument, or they may be dipped into the composition, a number of them at once. The cigars are then laid aside for a short time, and, as soon as the composition becomes hard enough, a small portion of any of the ordinary match compositions, of which phosphorus is usually the main ingredient, is placed in the center of the first composition. After this composition has burned out, it leaves a live coal on the end of the cigar, which usually continues in this condition for some time, so that the smoker need not immediately "draw" on it. This coal lights the cigar in a perfectly even and regular manner, so that the cigar does not burn on one side, as is usually the case, when lighted in the ordinary way with matches, etc.

Smelting and Desulphurizing Iron Ore.

Alexander Hamar, of New York city, has patented the following:—

"I propose to desulphurize the ore by mixing hydrogen with it through the medium of the blast. A heated chamber is filled with coarse iron filings, and with charcoal in lumps about the size of a cherry, in the proportion of about two thirds iron filings and one third charcoal. Steam is injected into this chamber, and is partially deoxidized by passing through the iron filings and charcoal, after which it passes through a coil of highly heated pipes, contained in a heating chamber warmed by gases. In passing through the heated pipes the steam is still further deoxidized by the absorption of its oxygen by the pipes. It is then conducted to the lower part of the furnace, whence the pipe divides into branches, corresponding in number with the tweers, into which I introduce the deoxidized steam. The steam thus deoxidized is nearly pure hydrogen. A blast of hot air is thrown in through the pipes, in the usual way, and, after mingling with the deoxidized steam, passes into the furnace and mingles with the charge, thus producing a high degree of heat. The hydrogen of the steam also combines with the sulphur contained in the fuel as well as with that of the ore, to form sulphureted hydrogen, which escapes with the other volatile products of combustion. I thus desulphurize the metal and economize fuel. My invention may readily be adapted for use in either a cupola or a puddling furnace. When used in a puddling furnace, I supply independent jets of hydrogen over the iron and over the fuel, to desulphurize them separately, and convey away the products of combustion of each, by separate channels."

GREGORY & MELOTTE'S PATENT ADJUSTABLE CLUTCH.

The ordinary mode of attaching the sling pulley for hoisting hay, brick, stone, etc., involves more or less of danger to the operator. For instance, in raising hay from the wagon to the mow some one must climb to a beam or rafter and secure the hoisting pulley, at imminent risk of falling. Generally he must bore a hole in the beam and screw in the shank of a hook on which to hang the hoisting pulley. All this dangerous work can be done by any person standing on the floor by means of the simple contrivance illustrated in the engraving accompanying this article. A brief description will suffice to give a proper idea of the invention, which was patented by G. W. Gregory, Aug. 14, 1866, reissued Oct. 22, 1867, and by G. D. Melotte Oct. 29, 1867, the two patentees having combined their patents.

The grapple or tongs, A, is similar in plan to the tongs used by ice men for handling blocks of ice and by builders in hoisting blocks of marble and other stone. The construction of the grapple is readily seen in the engraving. In elevating the device, a stick is introduced between the points of the tongs to keep the jaws open and when it is lifted by means of the pole, B, having a socket, C, on its end, engaging with the tang, D, of the tongs, the contact of the beam throws out the stick, and the jaws engage with the side or top of the

beam by the withdrawal of the hoisting pole, B, and the weight of the tongs. It is evident that the greater the weight which the tongs support, the firmer the adhesion of its jaws to the beam.

When it is desirable to remove the gripe from one point to another, or to take it down entirely, the staff or pole, B, with the socket, C, is applied to the end, E, of the link that sustains the pulley, F, raising the link until in strikes the two arms of A, opening them and disengaging the jaws of the tongs. Only one pole is required for both the operations; that of attaching and that of detaching the tongs, and both these movements may be accomplished by almost any person.

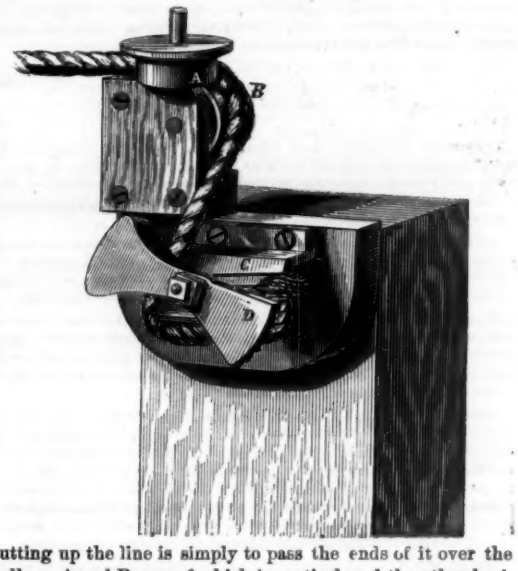
The device is designed for use in hoisting either ice, hay, stone, brick, mortar, or anything, and is useful in depositing hay, ice, or stone, or lifting building materials to place; useful for butchers and handy about saw-mills. It can be made by any ordinary blacksmith and cannot easily get out of repair.

The patent issued to G. W. Gregory is the first one taken out for clutch or adjustable pulley support, to be operated by use of poles, and his patent covers the device of elevating the clutch by means of a pole.

For information in regard to town, county, and state rights, or for the purchase of a clutch, address G. W. Gregory & Co., Watertown, Jefferson county, N. Y.

RIORDAN'S CLOTHES LINE HOLDER.

The object of the little article shown in the engraving is to overcome the trouble of putting up and taking down a common clothes-line, which is usually fastened by knots, the tying and untying of which is a matter often so annoying that the line is left up and exposed to all weathers. With this clothes-line holder once set up, no further trouble can possibly be experienced in this matter, as all that is to be done in



putting up the line is simply to pass the ends of it over the pulleys, A and B, one of which is vertical and the other horizontal so that the rope may run easily. The end is then pulled downward, until the line is brought to a proper tension, when it is introduced between the catching jaws, C D, by pressing it laterally to the left. The jaw, D, swings loosely on its pivot, and when the line is brought against it and pulled downward it swings, and thus admits the line, which is now let go, and as the outer end of D is weighted, it immediately presses up against the line and prevents it from running backward. The two jaws are made with a slope in contrary directions, and both are corrugated to assist in holding the line. When it is desired to take down the line all that is to be done is to pull the end downward and sideways to the right, thus withdrawing it from between the jaws and letting it run back over the pulleys.

It will be seen that not only does it afford the easiest means of putting up and taking down the line, but also that the line can be tightened to any required degree, thus dispensing with unsightly center props, and the holder may be set at any hight from the ground, and can be operated with one hand with equal facility at whatever hight.

The working parts are of cast iron, mounted on a block of wood, E, for facility in setting up, and are very little larger than the engraving. For further information address the patentee, P. Riordan, Arsenal, Washington, D. C.

Patented through the Scientific American Patent Agency, Dec. 31, 1867.

Composition for Removing Ink and Colors from Printed Paper.

Recently patented by Joseph A. Veazie, of Boston, Mass.

A saponaceous composition is first made by dissolving twelve pounds of potash, in boiling water. To this add fourteen pounds of rendered tallow. Boil three hours; then pour it into a suitable vessel, and add, while cooling, twenty five gallons of soft water, the water to be added gradually and the mass constantly stirred until cooled, in which state it is of a brownish color, and of the consistency of stiff jelly. The paper to be cleansed is placed in an open or closed vessel, with sufficient soft water to cover it. When the mass has boiled thirty minutes, and is boiling, add for every hundred gallons of water, five gallons of the saponaceous composition above described, stirring and beating the paper as much as possible, so as to reduce it to pulp. The ink and coloring matter will soon begin to rise in a scum at the top of the water, which should be allowed to flow off through a spout or faucet fixed for the purpose. As soon as the ink or coloring matter ceases to rise the water must be drawn off from near the bottom of the vessel, clean boiling water being at the same time allowed to enter at the top, the passage of the water through the pulp serving to thoroughly rinse it. After boiling and stirring for a few minutes the pulp may be removed, when it will be found in a clean and white state, suitable to be again used in the manufacture of white paper. In all cases the pulp should be finally beaten and washed in clean water.

Action of Naphthaline on Insects.—M. Eugène Pelouze has found that naphthaline prevents plants from being attacked by insects. Its effect is not to kill either the one or the other, but a very small quantity is sufficient to effectually drive the insects from the plant, and he believes that in this substance florists and agriculturists will find a very serviceable friend.

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Contents:

(Illustrated articles are marked with an asterisk.)

*Improved Combined Mortising and Boring Machine 225
Sulphurized Paper 225
*Ashcroft's Improved Piston Packing 225
Preserving Eggs 225
Roofing Compound 225
Dietetic Salt 225
*Roesler's Improvement in Match Safes 225
Ancient Locks and Keys 226
Heat and Cold 226
Kerosene Lamps 227
About Text Books for Mechanics. 227
*Improved Form of Drift 227
City Flower Gardens of Paris 227
Sketches from the Paris Exhibition 227
The Chemical Action of Light 227
The Hugon Gas Engine 227
*The Wheel Question 228
The Tallest Chimney 228
Composition for Stuffing Leather. 228
Editorial Summary 228
Notes on Recent Scientific Discoveries 229
Preserving Dead Bodies 229
Contribution to the History of Photography 229
Cardboard for Printing 229
The Imitations of Luxuries and their Deleterious Effects 229
Cancer Salve 229
Fabric for the "Manufacture of Hats, Caps, etc. 230
Tinning the Interior Lead Pipes.. 230
Manufacturing, Mining, and Railroad Items 230
Recent American and Foreign Patents 230
Answers to Correspondents 231
New Publications 231
*Wanzer's Harvester Pitman Connection 232
Friction Clear 232
Smelting and Desulphurising Iron Ore 232
*Gregory & Melotte's Patent Adjustable Clutch 232
*Riordan's Clothes Line Holder... 232
Composition for Removing Ink and Colors from Printed Paper 232
Utilization of Waste 233
Wrought Iron Fences—Setting Iron Fence Posts 233
Popularize Science 233
Aluminum Bronze—Its Properties and Uses 233
On Forging, Hardening, and Tempering Mill Picks 233
Patent Claims 224, 235, 236, 237, 238
Pending Applications for Reissues 238
Extension Notices 238
Inventions Patented in England by Americans 238

UTILIZATION OF WASTE.

The man who first used the word "waste" as a designation for the residues that accumulate in many industrial processes, would probably have bethought himself of some more appropriate appellation if he had been able to foresee the many and various uses to which they are now applied, and the importance which they have attained in the community. Let us cite a few examples.

The refuse ore which formerly used to obstruct the entrance to some German mines, to the great annoyance and disgust of the workmen, who considered themselves haunted by evil spirits, have become highly valuable since it was discovered that they contain metals so important as nickel and cobalt. The liquor which the manufacturers of soap formerly allowed to run off as useless, is the only source from which we derive the all-important glycerin. The sulphuric acid which used to poison the atmosphere and to destroy vegetation in the neighborhood of the works devoted to the roasting of sulphurets, is now carefully saved and converted into sulphuric acid. The "soda waste," which was permitted to accumulate in mountains in the respective factories, is now made to yield quite a number of useful products, such as sulphur, hyposulphite of soda, and others. We might continue to almost any length the enumeration of such articles, that are manufactured out of materials which were formerly rejected as useless, and the utilization of which has always enriched the fortunate discoverer, by lessening the cost of the principal article, and thus enabling him to drive competitors who were without this advantage out of the market.

What we want to impress upon the minds of our readers, and of all those concerned, is the certainty that in many instances still, products, solid, liquid, and gaseous, are wasted, permitted to escape with the atmosphere, to fill the sewers, or to decay out of doors, which would yield a rich reward to the man who would turn them to serve some useful purpose. The greatest success must be his who can, at the lowest price, make the most of any given article. Nothing ought to be thought too insignificant for consideration. Let us remember the example of Lafitte, who, by picking up a pin before the office of a banker who had rejected his services, laid the foundation for a fortune of millions. Who knows but what even the carbonic gas which we are now glad enough to get rid of by our chimneys, may hereafter be conveniently rendered useful in the economy of our households. We would, therefore, advise all manufacturers to let nothing leave their premises without examination and investigation; if you are unable to deal with the subject yourselves, consult some scientific expert with regard to it. Mines of gold, more reliable and more easily worked than those of California, may be nearer home than you imagine.

WROUGHT-IRON FENCES—SETTING IRON FENCE POSTS.

The first iron fence we ever saw was set up between fifty and sixty years ago. It was entirely of wrought iron and cost much labor and money. For many years only wrought iron was used in the construction of fences, railings, balustrades, etc., at least in this country; and even now a neater, lighter, less costly, and more durable fence can be made of wrought iron than of cast iron. The latter may be made in more elaborate forms, but the fragile character of cast iron as compared with wrought iron makes the latter preferable in this climate. A very neat wrought-iron fence may be built by any blacksmith with but little forging. The lower and upper rails may be of flat bar iron three-eighths by one and a quarter inches, or heavier if desired. These should be drilled or punched with holes at equal distances apart, from two to four inches. Then take round iron and bend it in the form of an arch, either gothic or semi-circular, and pass the ends through the top and bottom rails, riveting the ends in the lower rail or furnishing each end with a nut.

When the sizes of the round iron vary and the arches are made concentric the effect is very fine. For instance; let the holes in the rails be made four inches apart and there be three arches; the outer one may be made of half-inch round iron, the span of the arch being twenty inches. The next may be made of seven-sixteenths or three-eighths iron, with a span of sixteen inches, and the inner arch of three-eighths or quarter inch iron with a span of four inches. The fence will be very neat and elegant. The arches may be bent cold and the holes may be drilled on a common foot lathe, so that the fence may be made and put up by any one without the aid of steam or water power. The posts are merely uprights of iron similar to the rails, and they are fastened into stone pedestals in the usual way, the fence being strengthened by diagonal braces at proper intervals.

Iron fences are usually set on stone foundations, although some have iron bases, which, when the posts are secured to the bases by bolts, appears to be fully equal if not superior to fences resting on stone foundations. Melted lead is commonly used to fasten the iron to the stone, and, so far as our experience and observation extend, is better than anything else. Brimstone cannot be tamped, and it is unhandy to use, as it cannot be remelted without becoming viscid and refusing to run freely. Beside, it will absorb moisture, and combining with the iron it deteriorates the latter rapidly. Nor is lead entirely harmless in contact with iron; atmospheric air or water will oxidize the iron. The only protection is a coat of paint to exclude all moisture.

A cheap, durable and effective cement for securing wrought and cast-iron work to stone would prove a fortune to its inventor.

POPULARIZE SCIENCE

The necessity of a knowledge of scientific principles for the workingman cannot be insisted upon too often and too urgently, for it is this knowledge alone which makes him really the master, instead of the slave, of the implements of his profession. But although this principle is now so universally recognized that it would be a mere waste of time to expatiate upon it at greater length, it is an undeniable fact that almost nothing is being done to put it into practice. The artisans and mechanics of Europe are in this respect, infinitely more favored than those of our own country, and if it is claimed as an offset, that the latter, as a class, are superior in intelligence to their continental brethren, it should be remembered that this is only one reason more for furnishing them the opportunities which shall enable them to maintain and perpetuate this superiority. In this large and wealthy metropolis there is only a single institution—the Cooper Institute—which reaches the classes alluded to and, excellent as it is, it can only accommodate those that live within a given distance from it, while a half dozen of similar institutions, scattered throughout the whole city, would hardly be adequate to supply the instruction which the masses are craving. But it must always be borne in mind that there is a class of men of mature age, who have outgrown the school-room, who cannot bind themselves to a regular attendance and who after the fatigue of a day's hard labor find it impossible to listen to lectures with enjoyment and substantial profit; and yet it is just there men to whom such knowledge is most necessary and indispensible No one who has seen the "*Conservatoire des Arts et Metiers*" or similar institutions in Paris and the crowds of intelligent mechanics and artisans surging through these galleries during the hours set apart for the reception of the public, can fail to be struck with their immense utility, and if an American, with the void which in this respect exists in our own country. A museum is what is wanted, a collection of instruments and machines from the most simple to the most complicated, representing every variety of trade and manufacture, exhibiting all the latest improvements and open to the free inspection of all from morning till midnight. Lectures might be delivered at this establishment to explain the articles on exhibition, at a time which would render them convenient and agreeable to those who are expected to attend them. Of course, a long time would elapse before such an undertaking could be completed, but if a determined effort be made, it must succeed; and some of our wealthy philanthropists could perhaps be interested in the scheme by the consideration that such an establishment would do more toward dethroning King Whiskey, and improving the moral tone of the community than all other enterprises together which seek to improve men without offering them some attractive and useful way of spending their idle hours.

ALUMINUM BRONZE—ITS PROPERTIES AND USES.

The metal aluminum has certainly found its most useful application in the alloy known as aluminum bronze, a name perhaps somewhat inappropriately given, inasmuch as the term bronze has always been applied to compositions of copper, tin, and zinc. The alloy we propose to describe is composed of copper and aluminum in the proportion of 90 parts by weight of the former and 10 parts of the latter, or, when estimated by bulk, of 60 parts of the copper and 40 of aluminum. The color of the bronze closely resembles that of 18-carat gold, but is far superior in beauty to any gilding. Morin believes it to be a perfect chemical combination, as it exhibits, unlike the gun metal, a most complete homogeneousness, its preparation being also attended by a great development of heat, not seen in the manufacture of most other alloys. The specific gravity of this bronze is 7·7. It is malleable and ductile, may be forged cold as well as hot, but is not susceptible to rolling; it may, however, be drawn into tubes It is extremely tough and fibrous, which is proved by the fact that when drawn into wire it supports a weight more than three times that of the iron used for suspension bridges, and as to its elasticity, it is stated by Prof. Treaca that "the coefficient of elasticity of the aluminum bronze, the cast metal, is half that of the best wrought iron. This coefficient is double that of brass, and four times that of gun metal, under the same conditions."

Aluminum bronze, when exposed to the air, tarnishes less quickly than either silver, brass, or common bronze; and less of course, than iron or steel. The contact of fatty matters or the juice of fruits do not result in the production of any soluble metallic salt, which highly recommends it for various articles for table use. Prolonged contact of strong vinegar will undoubtedly exert some action, but then it must be remembered that even silver, under similar conditions, is also attacked.

The uses to which aluminum bronze is applicable are various. We have seen spoons, forks, knives, candlesticks, locks knobs, door handles, window fastenings, harness trimmings, and pistols, made from it; also objects of art, such as busts, statuettes, vases, and groups. In France aluminum bronze is used for the works of watches, as also watch chains and ornaments for ladies. The cost of these articles is less than that of the best plated ware, and the additional expense of replating is avoided. Its application to machinery would have been greater were its cost less, but for certain parts, such as journals of engines, lathe head boxes, pinions and running gear, it has proved itself superior to all other metals.

We have already referred in these columns to the fact that Hulot, director of the Imperial postage stamp manufactory in Paris, uses it in the construction of a punching machine. It is well known that the best edges of tempered steel become very quickly blunted by paper. This is even more the case when the paper is coated with a solution of gum arabic and then dried, as in the instance of postage stamp sheets. The sheets are punched by a machine the upper part (head) of which moves vertically and is armed with 300 needles of tempered steel, sharpened in a right angle. At every blow of the machine, they pass through holes in the lower fixed piece which correspond with the needles and perforate five sheets at every blow. Hulot now substitutes this piece by aluminum bronze. Each machine makes daily 120,000 blows or 180,000,000 perforations, and it has been found that a cushion of the mentioned bronze was unaffected after some months use, while one of zinc bronze is useless after one day's work.

The time may not be far distant when it will become possible to construct the screws of steamers of this metal, of which the great strength and toughness will be considered more than equivalents for the increased cost. Yet even this latter may not be an objection, for aluminum bronze screws might be made for about one half the weight of those now in use.

ON FORGING, HARDENING, AND TEMPERING MILL PICKS.

Mr. Isaac B. Hymer, of Indiana, says that his experience as a builder of French burr mills, and as a miller, for many years, has convinced him that the plan he has adopted and followed in forging and tempering mill picks, is excellent. He says:

In the first place, get double refined cast steel made expressly for mill picks. Be careful in drawing out the pick not to heat the steel higher than a cherry red. Use an anvil and hammer with smooth faces. When finishing the pick do not strike it on the edge, but hammer the pick on the flat side, striking light and often, until the steel is quite dark, letting the blows fall so as to close the pores of the steel. If the last blows strike the edge of the steel, the pick will fly and "spawl" off. When a dozen picks are ready to temper, get two gallons of rain water, from which the chill should be taken if in winter, by dipping a hot iron in it, add two pounds of salt, which dissolve, and your bath is complete. Heat your picks gradually from the center, and let the heat run to the point, and when it is a dark cherry red, dip the point of the pick vertically into the bath and hold it still, not moving it about to find a cool place. When the heat has left the part immersed, take it out and cool the balance of the pick in ordinary water used in the shop. This process should be repeated on the other end of the pick. When taken out of the tempering bath the pick will look silvery white. The use of the salt is to clean the scale from the steel and make it tough. With the edge made by this process the pick will cut clean, clear, and fine, such a cut as millers need for "cracking."

The whole secret is in the heating and hammering. If not hammered enough the steel will spawl off, and if heated too hot it will crumble.

DYNAMITE OR GIANT POWDER.—Prof. Nobel, of Hamburg, not entirely content with his former discovery, nitro-glycerin, has brought out another explosive, to which he has given the above name. Instead of being an oily liquid, liable to leak from the vessel in which it is confined, and produce a spontaneously inflammable mixture with rags, shavings, and other packing material, this powder resembles snuff in appearance, and in a loose, non-compressed condition, does not explode, but burns slowly with but little smoke, the latter an invaluable property in working closed mines or tunnels. A detonating cap is required to explode it. Late California papers contain accounts of the prodigious power of this powder, as shown in some experiments tried in that state. They recommend it highly as being vastly more explosive, and requiring much less drilling or preparation of the rock, than gunpowder.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office,

FOR THE WEEK ENDING MARCH 24, 1868.

Reported Officially for the Scientific American.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—

On filing each Caveat.....$10
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On issuing each original Patent.....$20
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In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ *Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to Inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.*

75,718.—CORN CULTIVATOR.—W. R. Adams, Independence, Mo.

I claim, 1st, The semi-circular shaped plate, a, substantially as described and for the purposes set forth.

2d, The cross-piece, D, as described, and for the purpose set forth.

3d, The adjustable slides, E, substantially as described and for the purpose set forth.

4th, The combination of these three plows, the plate, a, the cross-piece, D, and the slide, E, substantially as described and for the purpose set forth.

75,719.—PARLOR COAL SIFTER.—Sylvester Albee, Providence, R. I.

I claim the radial arms, B C, in combination with the sleve, a b c d f, and movable stop, K, substantially as described and for the purpose set forth.

75,720.—MOWING MACHINE.—Wm. Allen, Worcester, Mass., assignor to Ames Plow Company.

I claim constructing the hub, f, with a lip or flange, n, to project over and cover the edge of the axle, substantially as shown and described.

Also, constructing the face plate, w, with a lip or flange, x, to cover and protect the adjacent edge or corner of the hub, substantially as shown and described.

Also, combining with the crank bearing, p, an auxiliary bearing, o', secured to the frame, a, by flanges p' q' r', substantially as set forth.

75,721.—LIQUID METER.—Richard H. Atwell, Baltimore, Md.

Antedated March 7, 1868.

I claim, 1st, The arrangement within a measuring chamber, B, of the oscillating piston, E, and diaphragm or partition, C, with a reversible valve, automatically operated by the same mechanism that moves the piston, substantially as and for the purpose set forth.

2d, The oscillating arm, L L1, and springs, L2 L3, in combination with the latch, J, and spring, K, or their equivalents, substantially as and for the purpose specified.

3d, The valve F, having separate chambers, F2 F3, in combination with the receiving and discharging chambers, G1 G2, substantially as and for the purpose described.

75,722.—BUCKLE.—Wm. Babin, New York city.

I claim the double buckle herein described, having the tongues and buckle frame, together with the eyes or means of fastening the buckle to the back of the garment, arranged with reference to each other, substantially as described, so as to provide for tucking away the loose end of one of the straps under the buckle, when the buckle is fastened to the back of the garment, substantially as described.

Also, the loop, g, in combination with a double buckle, constructed in other respects in the manner and for the purposes herein described.

Also, the double buckle, having one frame and two opposite tongues, the eye-holes or fastening devices at the middle of each side of the buckle frame, substantially as described.

75,723.—VARIABLE EXHAUST FOR NON-CONDENSING ENGINE.—James H. Baker, Saratoga Springs, N. Y.

I claim the arrangement of the lever, G, bolt, F, disk valve, D, chamber, A, and pipe, B, substantially as herein described.

75,724.—MACHINE FOR MAKING BUTT HINGE.—Henry D. Blake (assignor to P. and F. Corbin), New Britain, Conn.

I claim the jaws, o o', arranged upon the stock, h, and actuated by cam, d', through the stock, h', arm, k, plate, m, or their equivalents, to feed the wire, y, into the holding and cutting die, r, substantially as and for the purpose described.

Also, in combination with the above, the screw, x, or its equivalent, for fixing the extent of the backward motion of the stock, h, whereby the length of the wires being cut is regulated.

Also, the combination of the cams, e t', lever, t, shear, e, for cutting the wire at each successive revolution of the shaft, b, and all constructed and arranged substantially as described.

75,725.—APPARATUS FOR SUPPLYING WATER TO GRINDSTONE.—Ferdinand Blauss, New York city.

I claim the separation of the water trough of a grindstone from the grindstone, so that the lower part of the stone does not remain immersed in water or exposed to the action of moisture of water when the stone is in a state of rest, and furnishing water from the water trough to the upper surface of the stone by means of a pump, or its mechanical equivalent, worked by the revolution of the stone.

Also, the supply of water to the upper surface by means of streams from the ends of the distributor, all substantially in the manner and for the purpose herein described.

75,726.—NAME PLATE FOR COFFINS, ETC.—George Brabrook (assignor to Reed and Barton), Taunton, Mass.

I claim the arrangement of the name plate, the spring, and the picture frame, the whole being substantially as set forth.

75,727.—RECLINING CHAIR.—H. B. Braman, Boston, Mass.

I claim, 1st, The combination of the slotted adjusting bar, E, with the rod, F, and elastic washer, substantially as and for the purpose specified.

2d, In combination with the above, the device, b d, constructed as described, for connecting together the portions of the movable frame, as and for the purpose set forth.

75,728.—MACHINE FOR MAKING EXCELSIOR.—George Brooks and Samuel Clement, Detroit, Mich.

We claim the arrangement of the wheel, A, shaft, B, the spurs, C, and plane irons, D, in their proper openings in the rim of the wheel, the braces, E and G, and the lever, H, when combined and operating substantially as and for the purposes herein set forth.

75,729.—LINIMENT FOR HORSES AND OTHER ANIMALS.—Wm. Christman, Philadelphia, Pa.

I claim the above combination in the proportions specified.

75,730.—BRICK KILN.—Samuel H. Clapp, Malden, Mass.

I claim the brick kiln, A, provided with the flues, M M', dampers, N N' and H, and the openings, K K', and L, combined and arranged as set forth and described.

75,731.—LAMP.—Hezekiah M. Clark, Cleveland, Ohio.

I claim, 1st, The corrugations, c, in combination with the perforated tube, B, and flange, C, substantially as and for the purpose set forth.

2d, The grooved flange, D, in combination with the tube, B, and globe, substantially as and for the purpose set forth.

75,732.—MEDICAL COMPOUND.—Horace Clark (assignor to Dwight L. Clark), Northampton, Mass.

I claim the above explained composition, as composed of the constituents hereinbefore mentioned, such being for the purpose or purposes as set forth.

75,733.—SAW.—Wm. Clemson, Middletown, N. Y.

I claim, 1st, The saw tooth, A, when constructed with a sidewise bend, forming a spring to hold it in the slot of the saw plate, substantially in the manner and for the purpose described.

2d, The saw teeth, A A, when constructed with a twist alternately in opposite directions, for the purpose of giving a set to the tooth, and an additional security in holding the tooth in the slot in the saw plate, in the manner set forth.

3d, The saw tooth, A, when constructed with a sidewise bend and a twist, substantially as described.

4th, The saw tooth, A, when constructed with a sidewise bend, a twist, and having its sides on lines dissimilar to the lines on the edges of the slots in the saw plate, substantially as described.

75,734.—SAW.—Wm. Clemson, Middletown, N. Y.

I claim the curbed tooth, b, when constructed thinner than the saw plate, slightly bent sidewise and twisted, in combination with the recess in the saw plate, when said recess is constructed substantially as described.

75,735.—SHEAVE.—James L. Collins and Henry C. Burgie, Chicago, Ill.

We claim in the manufacture of sheaves the formation of a rabbet or flange, a, in or upon that part of the sheave in which the soft metal is applied, substantially as and for the purposes set forth.

75,736.—WOOD TURNING LATHE.—Matthew F. Connet, Ladago, Ind., assignor to himself, T. G. Malden and Wm. C. Hendricks.

I claim, 1st, The two vibrating frames, G H, employed respectively to hold the pattern and material to be operated in or nearly in the same plane with with the axis of the cutters, and vibrate them at equal distances from the centers of points of vibration of the frames, so as to produce a fac simile of the pattern, substantially as described.

2d, Releasing the stuff, E, from the back rest and cutters, by means of the conical enlargements, I I, formed upon the end of the pattern, F, substantially as set forth.

3d, The adjustable arm or rest, O4, in combination with the yielding stock, O2, and back rest, O, all arranged and operating substantially as described and represented.

75,737.—UTERINE ABDOMINAL SUPPORTER.—Walter Crocker, Meadville, Pa.

I claim the band, A A, and pad, D, in combination with the pads, E E, and the straps, F F and m m, when the same are constructed and arranged as described, for the purposes set forth.

75,738.—CAR COUPLING.—Rolan Daily, Canal Township, Pa.

I claim a car coupling composed of the pin, S, lever, R, spring catches and operating devices connected therewith, for locking the arm, B, all arranged in a draw head, combined and operated as described for the purposes set forth.

75,739.—BOILER FURNACE.—Alfred De Pindray, Paris, France.

I claim, 1st, A furnace so constructed that the walls surround the boiler and leave spaces in manner substantially as specified, and having the fire box disposed between vertical walls of said furnace, and of the relative dimensions, and in manner substantially as shown and described.

2d, The inclined concave wall, K, connecting the floor of the ash pit with the floor of the flue at the rear end of the ash pit, substantially as set forth and described.

75,740.—WATCH KEY.—R. H. Dilley, Regnier's Mills, Ohio.

I claim the improved watch key, consisting of the hollow case, provided with the hinged door, A, and springs, E and D, when constructed as and for the purpose described.

75,741.—RAILROAD SWITCH.—G. L. Dulaney and J. A. Kaufman, Mechanicsburg, Pa.

We claim, 1st, The gravitating weight, a2, with its jointed connecting rod and fulcrum, in combination with the switch rails, a a, in the manner and for the purpose herein described.

2d, The combination of the inclined levers, B2 B3, with the rods, o o, in the manner and for the purpose herein described.

3d, The combination and arrangement of the weights, o3, bolts, D1, and switch rails, a a, in the manner and for the purpose herein described.

75,742.—SALVE.—Theodore Enszlin, Newburg, N. Y.

I claim the combination of the materials contained in the composition of matter herein described.

75,743.—ELECTRIC COMMUTATORS.—Leroy B. Firman, Chicago, Ill.

I claim a commutating wheel composed of two plates, circular or annular, one of a conducting and the other of a non-conducting material, L D, when alternate sections of the two plates of their peripheries are moved in contact with the point, d, and when the points of alternation are chamfered off and kept in contact with each other, in the manner and for the purposes specified and described.

75,744.—MEDICINE BOTTLE.—Wm. H. Flinn (assignor to himself and Albert H. Saunders), Nashua, N. H.

I claim the combination of the administering vessel or cup, B, and its induction tube, D, provided with the opening and sealed at bottom, as described, with the cork or stopper of a bottle, the whole being arranged so as to operate substantially as and for the purpose specified.

75,745.—MEDICINE BOTTLE.—Wm. H. Flinn (assignor to himself and Albert H. Saunders), Nashua, N. H.

I claim the arrangement of the cup with the stopper, so that when the latter is within the neck of the bottle the cup will extend into the bottle, as specified.

75,746.—DASH BOARD FOR CARRIAGE.—Wm. Franklin and T. M. Smith, East Randolph, N. Y.

We claim the grooved frame, B, with its plates, A A, and connecting pieces, H H, when constructed substantially as specified.

75,747.—PUMP.—Robert Gilliland and R. H. Armstrong, Hudson, Mich.

We claim the arrangement of the water chamber, E, upon the top of section, B, for causing a cold water packing, which is formed by the operation of the pump, and constitutes a double acting force and suction pump, without placing the working parts under water, as set forth.

75,748.—HEATING STOVE AND FURNACE.—Wm. C. Googins, Portland, Me. Antedated March, 18, 1868.

I claim the combination and arrangement of the tube, a, air chambers, f, doors, g, semi-circular tipping grates, c, and ash pit, h, in a heating furnace, substantially as and for the purpose set forth.

75,749.—CORN PLANTER.—Henry P. Gregg, Cincinnati, O.

I claim, 1st, The manner of adjusting the cups, c and d, in their depth, by reversing them, for the purpose described.

2d, The narrow chute or ante-chamber, b, for the purpose of pre-arranging the grains before entering the cup, as specified.

3d, The combination of the movable, reversible measuring cup with a stationary tube, when attached to a hoe, for the purpose herein set forth.

75,750.—CURTAIN FIXTURE.—W. D. Gridley, New Britain, Ct.

I claim a curtain friction bracket, consisting of the socket case, f, friction pads, h i, sprink, k, knob, n, substantially as described.

75,751.—BILLIARD CUE.—Heber C. Griffin, Franklin, N. H., assignor to himself, Geo. W. Griffin and John N. Howe.

I claim the billiard cue, A, composed of two separate jaws, C and D, and tip, E, and socket, B, constructed and arranged substantially as and for the purpose described.

75,752.—WIND WHEEL.—Earl J. Hall, Indianapolis, Ind.

I claim, 1st, The fans or wings, B, having their surfaces in straight lines, excepting at their inner ends, which are provided with the short curves, b', for the purpose described.

2d, The governor, D, wheel d3, and chain, c', when combined and arranged substantially as described.

75,753.—DEVICE FOR OILING FAST AND LOOSE PULLEYS.—Wm. Hamilton, Chicopee, Mass.

I claim, 1st, The sleeve, B, with hollow cylinder, e, constructed as shown, and arranged upon the shaft, C, substantially in the manner and for the purpose described.

2d, In combination with the sleeve, B, the shaft, C, formed as shown, with the taper and projection, j, substantially as set forth.

3d, The tongue, k, when connected with a dripping trough, i, for the purpose and in the manner shown.

75,754.—LOW WATER DETECTOR.—Joseph Harrison, Jr., Philadelphia, Pa.

I claim a tube, B, communicating at one end with a steam boiler, and closed at the opposite end, in combination with the water supply pipe, F, and the disk, i, of glass or any equivalent to the same, the whole being constructed and operating substantially as and for the purpose herein set forth.

75,755.—CASTER FOR SEWING MACHINES.—Richmond Hathaway, Chicopee, Mass.

I claim the arrangement of the levers, C and C', with casters and connecting rod, E, combined with the hand lever, B, and treadle, A, with cam, K, substantially as and for the purpose shown.

75,756.—FARM GATE.—Henry A. Henderson, Avoca, assignor to himself and Charles M. Gray, Whitestown, N. Y.

I claim a farm gate having the guide board, D, slot, E4, rolls, B1 and B8, and the notches, E6 and E7, and the hook, B2, in combination, for the uses and purposes mentioned.

75,757.—TRACE FASTENER.—Levi Herr, West Lampeter, Pa.

I claim the shallow box, A, with its spring bolt trigger, B B B b, screw or flange attachment, D, in combination with the trace plate, E, arranged and operating substantially in the manner and for the purpose specified.

75,758.—MODE OF SECURING CHECKS, DRAFTS, ETC., FROM FRAUD.—James Hester, Knoxville, Ill.

I claim, 1st, The method of attaching and using upon checks, drafts, and such like papers, concealed private marks and instructions, substantially as described, and represented by example, O, on specimen No. 1.

2d, The method of making, folding, and fastening concealed private marks, instructions, and signatures, upon stubs or blank ends of checks, drafts, etc., substantially in the manner and for the purposes as herein described, and as shown by example, T S, on specimen No. 2.

75,759.—WIRE FENCE KEY.—S. B. Hewett, Jr., Eagle Grove, Iowa.

I claim, 1st, The combination of the wheel, A, provided with flanges, as shown, and a slot, D, with the removable pins, C, or their equivalent, arranged and operating as and for the purposes herein set forth.

2d, In combination with the above, the arrangement of the jaws or lips, E, as and for the purposes specified.

75,760.—HAT CONFORMATOR.—Benj. Hogan, Albany, N. Y.

I claim 1st, The pressing rim, B, spring, C, and holding catches, d d, combined and arranged substantially as and for the purpose specified.

2d, In combination with the measuring fingers or arms of a hat conformator, the ring or band, B, or equivalent device, for securing the said arms in fixed position, substantially as described.

3d, In combination with a hat conformator, an indicator, or equivalent registering device, upon which is indicated the size to which the measuring arms are distended, substantially as described.

4th, The cord or chain, m, fingers, F, and indicator, H, arranged and operating as described.

75,761.—MACHINE FOR HULLING GRAIN.—Abijah Hubbell, Sharon, Conn., assignor to himself, E. P. H. Capron, Springfield, Ohio, and Geo. V. Capron, Sharon, Conn.

I claim the construction and arrangement upon the straps, t, of the bearings, Kf for the shaft, B, and the adjusting screws, l, for trimming the stone, as herein set forth, for the purpose specified.

75,762.—WASHING MACHINE.—Wm. C. Hunter, Newport, Ky.

I claim the rollers, I and K, the vibrating finger bar, D, having the cross head, E, and fingers, E' E', the cylindrical box, B, pin, C, and connecting rod, G, and lever, H, when the same are constructed and arranged substantially as herein described and for the purpose specified.

75,763.—MACHINE FOR PREPARING PEAT.—Chas. W. Inglis, Paterson, N. J.

I claim, 1st, The reciprocating crowder, D, scraper, H, and passage, M, arranged relatively to the mill, A a B b, or its equivalent, substantially in manner and so as to operate as herein set forth.

2d, The cutter, I, passage, M, reciprocating crowder, D, and mill, A B, combined and arranged as herein represented and described.

75,764.—STREET RAILWAY SCRAPER.—J. W. A. Jones, Memphis, Tenn.

I claim the combination of the springs, B B, levers, H H and G G, in connection with the fulcra, h and g, the hinge, F, and the upright shaft, C, all constructed and arranged as described and for the purpose specified.

75,765.—WATER WHEEL.—Jacob O. Joyce, Dayton, Ohio.

I claim the annular concave plates, 1, 2, and 3, having the buckets, k l, arranged between them, so that the upper ones, k, will alternate in position with the lower ones, l, the plates and the buckets gradually diminishing in depth from the top downward, so as to give the wheel a cylindrical exterior and a conical interior, all constructed as described, and arranged in connection with the register case, E, and gate of chute cylinder, H, substantially as specified.

75,766.—MODE OF PRODUCING AN EXTRA SURFACE ON PAPER MACHE.—Edward S. Judge, Baltimore, Md.

I claim, 1st, The application of lead and oil to the surface of the mold to prebent the adhesion of my surface coating to the mold.

2d, The admixture of ground lead in the plaster of Paris or composition of the mold is made.

3d, The obtaining of an extra surface on papier-mache by coating the mold before the impression of the papier-mache therein, with the aforesaid composition, or any other substantially the same, and which will produce the intended effect.

75,767.—TORPEDO TOY GUN.—Eben W. Keyes, Boston, Mass.

I claim, 1st, Attaching to one end of the rod, D, a cup for holding the torpedo, and to the other end a knob or ring for pulling back the rod, operated by a spring, substantially as described and for the purpose set forth.

2d, Combining with the above the pin, L, and hook, K, substantially as described and for the purpose set forth.

75,768.—DEVICE FOR FASTENING SHOES.—Nicolaus Kirchner, Philadelphia, Pa.

I claim a fastening for shoes and gaiters consisting of the springy lever, B, and plate, C, constructed and combined together substantially as described, and operating, when applied to the shoe or gaiter, as a lever for drawing the closing parts together, and as a spring catch for fastening them in that position, as described.

75,769.—PILE FOR GIRDER IRONS.—Andrew Kloman, Pittsburg, Pa.

I claim making up a pile or fagot to be rolled into girder beams, of top and bottom pieces, a a', connected together by plates, b and c, in any desirable number, the plates, b, entering grooves in the lower and upper faces of the top and bottom pieces respectively, and alternating with plates, c, substantially in the manner and for the purposes hereinbefore set forth.

75,770.—MAKING PILES FOR GIRDER BEAMS.—Andrew Kloman, Pittsburg, Pa.

I claim grooving those parts of a pile or fagot for making girder beams which, when rolled, are to form the web of the beam, so as to secure an aperture, b, along through the heart of the pile or fagot, substantially as and for the purposes hereinbefore set forth.

75,771.—BURGLAR ALARM.—Christian Knisely, Chicago, Ill.

I claim, 1st, Combining the spring, b, and hammer, c, constructed in a single piece, with the stationary pistol barrel, d, all arranged as described.

2d, Combining the piston, g, hammer and spring, c, substantially in the manner shown.

3d, Adjusting the piston, g, by means of the thumb nut, i, substantially as shown.

4th, In a burglar alarm, the combination of the pistol barrel, d, hammer, c, spring, b, piston, g, spring, c, and thumb piece, i, all arranged and constructed as described.

75,772.—CHURN.—William Lamb, Rochelle, Ill.

I claim the adjustable clamp, K, in combination with the wheel, H, and clasp, L, the several parts being constructed and operating substantially as set forth.

75,773.—HARVESTER.—Israel Lancaster, Baltimore, Md.

I claim in combination with a flexible knife bar between the point of attachment to the reciprocating lever and the first knife section, a rigid attachment of the knife bar to the end of the reciprocating lever, forming a joint immovable in any direction.

75,774.—HARVESTER.—Israel Lancaster, Baltimore, Md.

I claim the method of holding the reciprocating lever, D D, up to its work, by means of nuts screwing on the driving wheel shaft, substantially as described.

75,775.—SIGNALING APPARATUS.—Samuel S. Laws, New York city.

I claim, 1st, A series of wheels thus alternately moved and held in check, in combination with contrivances for giving either an advance or a retrograde movement, according to circumstances, substantially in the manner and for the purpose above set forth.

2d, In a reporting and signaling apparatus, the series of disks and wheels as above shown, in combination with the coils, O O', the armatures, E E', and the levrs, L L', constructed, arranged, and operating in the manner above set forth.

3d, In a reporting and signaling apparatus, intended specially to report the rise and fall of gold, stocks, etc., the use of disks operated substantially as above shown, and so arranged as to present integers representing tens, hundreds, etc., as well as fractions varying by eighths, when the whole are so disposed, either in rows or in any other prearranged order, as to communicate at a glance the changes in the stock market, substantially in the manner above described.

75,776.—MEDICAL COMPOUND.—Elliott A. Lowdermill, Grand Junction, Tenn.

I claim the compound fluid composed of alcohol, honey, spirits of turpentine, gum camphor, alum, and blue vitriol, in the proportions herein specified and for the use and purpose described.

75,777.—ANIMAL TRAP.—C. C. Lyman Edenboro, Pa.

I claim, 1st, The revolving wings or platforms, B, and levers, F, pulley, C, cord, C', and weight, E, arranged in the manner and for the purpose substantially as described.

2d, The wings, B, with pivoted levers, F, in combination with the spring catch, H, and catch, G, arranged as and for the purpose substantially set forth.

75,778.—NIGHT CHAIR.—James Macferran, Philadelphia, Pa.

I claim, 1st, The double slide, F F', combined and arranged with the pot and chair, substantially as and for the purpose above set forth.

2d, The combination and arrangement of the cover, H, with the seat, G, and arms, I I, substantially as described, and for the purpose specified.

3d, The combination of the clasps, J and J', with the cover, B, and arms, I I substantially as and for the purposes set forth.

75,779.—HEEL SEAT FOR BOOTS AND SHOES.—Geo. I. Mason (assignor to himself and Wm. M. Scott), Lewiston, Ill. Antedated March 10, 1868.

I claim a heel seat with sole attached, for the purpose specified, and consisting of the crescent form with sole attached, as and for the purpose specified.

75,780.—WOODEN PAVEMENT.—Hugh McDougall (assignor to himself, Robert Stuart, and Coll McDougall), Chicago, Ill.

I claim the guide, A, when provided with fingers, a a, or open space for the admission of gravel, substantially as specified.

75,781.—MACHINE FOR BENDING TIRES.—Jacob Naylor, Hedgesville, W. Va.

I claim a former, A, provided with flanges, b b, and adjustable stirrups for holding the bar, B, all constructed, arranged, and combined as described.

75,782.—PUNCHING MACHINE.—Franklin Nelson, Wyandotte, Mich.

I claim, 1st, The pendulum levers, D and E, working upon fulcra, K and P, operated by lever, F, when secured to sliding blocks, I, by the trunnions, T, in combination with the plates, O, trunnions, N, and operating substantially as herein set forth.

2d, The combination of all the above-described parts, when used in connection with the punch, J, and die, L, and any proper frame, A, and any suitable levers, F G, and H, arranged and operating substantially as and for the purposes herein described.

75,783.—EXCAVATOR OR SHOVEL.—W. T. Nichols, Rutland, Vt.

I claim, 1st, A combined cart box and scraper or shovel, in combination with the front self-acting end boards, and the self-fastening rear end door, substantially as set forth and described.

2d, The connecting or draft frame, C, together with the combination of the foot lever, G, the hand lever, H, and the slotted tongue, U, substantially as set forth and described.

3d, The application of the draft to the box, A, at the rear of and below the axle by fastening the ends of the frame, C, to said box, and the change of draft from the rear to the front of said box, A, by the use of the bail, E, and the slotted tongue, U, substantially as set forth and described.

4th, The drop and hoist levers, D D, pivoted in front of the axle, for the purposes and substantially as set forth and described.

5th, A self-loading cart, constructed of the parts lettered from A to V, respectively, in the manner and for the purposes herein set forth and described.

75,784.—BOOT-CRIMPING SCREW.—B. S. Norris, Ripley, O.

I claim the jaws, A and B, provided with the screw, D, when combined and arranged to operate in conjunction with the screw, E, and nut, F, substantially as described, and for the purposes set forth.

75,785.—WOOD-BORING MACHINE.—J. Null, Quincy, Pa.

I claim the frame, F, moved by the shaft, G, cog wheels, H, crank, I, wheel, K, and weight, L, and the movable frame, M, controlled by the spring, N, when constructed and arranged to operate substantially in the manner and for the purposes as set forth.

75,786.—HORSE RAKE.—Oscar Paddock, Watertown, N. Y.

I claim, 1st, a hay fork, in which the center rod and claws are combined with the sheath, in such manner that the claws, when projected, shall bear with a lateral pressure against the sheath, or against shoulders or bearings formed therein, so as to relieve the center rod from upward pressure or strain, substantially as and for the purposes set forth.

2d, The combination of the center rod and its pivoted claws, notched, or provided with inclined shoulders, as herein described, with the sheath, and correspondingly shaped bearings formed in the same, for the reception of said shoulders, substantially as and for the purposes shown and set forth.

3d, The combination with the center rod and claws, of the spring, "locking bolt," and lever, and rope or its equivalent, attached to both center rod and lever, under the arrangement and for operation as herein described.

4th, In a hay fork in which the claws and center rod are combined with the sheath, as described, the method of raising the center or elevating rod and retracting the claws by means of a spring or springs combined with the said rod, substantially in the manner herein shown and described.

5th, The combination with the center rod, of the sheath, its handle, and a locking mechanism for the said rod, attached to and arranged within the said handle, substantially as herein shown and described.

75,787.—EGG BEATER.—William H. Pierce, Bangor, Me.

I claim an egg beater, constructed of a cone of coiled wire, left free to move vertically as a spring, substantially in manner as described and shown.

75,788.—SHUTTER FASTENING.—John A. Pipo, and William Walbaum, Hoboken, N. J.

We claim, 1st, The combination, in a blind lock or fastener, of the catch, B, and spring detent, F, substantially as and to the effect set forth.

2d, The combination, in a blind lock or fastener, of the catch, B, detent, F, and key, G, substantially as set forth.

3d, The combination of the catch, B, detent, F, and staple, K, substantially as herein set forth.

4th, The combination of the catch, B, detent, F, staple, K, and pin, l, or its equivalent, substantially as hereinabove set forth.

75,789.—ODOMETER.—William H. Prescott, and Whitcomb Judson, Galesburg, Ill. Antedated March 9, 1868.

We claim, 1st, Imparting motion to the gearing by means of an eccentric on the end of the actuating shaft, operating a slide with a pawl, substantially in the manner and for the purpose as herein described.

2d, Providing a stationary dial plate with two sets of figures and two hands, a mile hand and a multiplier, operated substantially in the manner and for the purpose as herein described.

3d, The construction of the ratchet wheel, C, with pinion, e, the stationary and movable wheels, c and d, the loose hub, D, with tooth, g, and ratchet wheel, E, as arranged and operated, substantially in the manner and for the purposes as herein described.

75,790.—HAY RAKER AND LOADER.—A. J. Preston, Guilford, N. Y.

I claim, 1st, The combination of a fork, having a vibrating and reciprocating motion, with a hay rake and a clearer, substantially as described.

2d, So arranging and supporting a hay fork, which vibrates about a horiz

zontal axis, that this fork shall remove the hay, gathered by a rake, from this rake, and, after the delivery of its load upon a wagon, it shall rise over and arrange itself in rear of the load which was gathered upon the rake during said delivery movement, substantially as described.

3d, The arrangement of the rake teeth upon arms projecting from beam, a, in combination with means which will cause the fork to rise over the load, gathered upon the rake during the delivery movement of the fork, substantially as and for the purposes described.

4th, Providing a frame, carrying hay raking and loading devices, with a pole, P1, and two steadying arms, E E, the latter carrying on their front end rollers, g2, for the purpose and in the manner substantially as described.

75,791.—COOKING STOVE.—Louis T. Pyott, Philadelphia, Pa.

I claim, 1st, The combined furnace and truck, A, mounted upon boxed on encased wheels, B B, as described, and for the purpose specified.

2d, In combination with the foregoing, the V-shaped rails, extending from the rear of the stove to the front of the hearth, as and for purposes explained.

3d, The automatic division plate or damper, D d, operated by the motion of the furnace, as and for the purposes described.

4th, The detaining plate, E, in combination with the shifting furnace, A, in the manner described.

75,792.—GATE.—W. Willshire Riley, Columbus, Ohio.

I claim swinging or revolving the gate between two posts, by means of two pivoted arms and balance weights, as shown and described.

75,793.—SHINGLE MACHINE.—Adam G. Ritz, Elizabethtown, Ind., assignor to himself, John B. Carter, and William Lindley.

I claim the springs, or strips, r, operated by set screws, g, and arranged radially across the annular groove, S, beneath wheel, B, in combination with crank levers, n, for adjusting the platforms, m, substantially as described, and for the purpose set forth.

75,794.—PRESERVING SKINS OF ANIMALS.—Louis S. Robbins, New York city.

I claim the process herein described for preserving the skins of animals from the destructive influence of the atmosphere and the attacks of every species of insects, the same consisting in saturating the skins with vapors of carbolic acid, obtained from the oil of coal tar, wood tar, bitumen, or other similar substances, substantially as herein described.

75,795.—PROCESS OF OILING, PRESERVING, AND STRENGTHENING LEATHER.—Louis S. Robbins, New York city.

I claim the process for saturating skins or leather with oleaginous vapors and compounds, before, after, and during the operation of carrying the same, substantially as herein described.

Also, the application of the same process of treatment to all such articles manufactured from leather as may require the use of oils, either to render them impervious to moisture, or to increase their flexibility, strength, and durability.

75,796.—MOP HEAD.—W. A. Robinson, Grand Rapids, Mich.

I claim, 1st, The combination of the arms, d d, the socket, a, and teeth, l, and the mode thus provided for attaching and holding the bows, c c, substantially as and for the purpose described.

2d, The arrangement and combination of the socket, a, head, b, bows, c c, braces, h h, with the arms, d d, links, e e, and teeth, f, substantially as and for the purpose intended.

75,797.—HARVESTER.—Clement Russell, and William K. Miller, Massillon, Ohio.

We claim, 1st, The construction and arrangement by which the platform and dropper are made interchangeable for hand raking or mechanical dropping, under the control of the driver, substantially as described.

2d, Making the end board, S, in two parts, so that the after part can be removed with or when the platform is removed, to adapt the machine for the application of the dropper, substantially as described.

3d, The combination of the pulley, 2, pulley lever 3, holder, 4, and rubber spring, 5, or its equivalent, for taking up the slack in the reel chain, when said spring pulley is arranged on the slack side of the chain, and is used in connection with a fixed pulley, 1, substantially as and for the purpose described.

75,798.—FEEDING MECHANISM FOR CARDING ENGINE.—Thomas Sampson, Wauskuk, R. I., assignor to George S. Harwood, and George H. Quincy.

I claim, in a machine, such as described, the application and use of a revolving shaft, mounted in the front of the machine, at or near the point where the silver is delivered to the traversing guide, substantially as and for the purposes herein shown and set forth.

75,799.—SMOKING PIPE.—Frederic Saunders, N. Y. city.

I claim the use of a tube and hood placed in the bowl, or a tube or tubes placed in a separate chamber or chambers, or their equivalents, in pipes for smoking, for the purpose specified.

75,800.—HORSE HAY FORK.—William Scholl, Marion Township, Pa.

I claim the curved lever, D, bent and pivoted at its upper end, and provided with a projection, e, for securing the metal loop, E, when used in combination with the tines, A B, and pulley, C, with their cords, all constructed, arranged, and operating as set forth.

75,801.—HARVESTER RAKE.—Wm. H. Seymour, and Aaron Palmer, Brockport, N. Y.

We claim, 1st, The rake arm mounted in the swinging end of the rake frame or crane, and provided with a slot or perforation, substantially as and for the purpose described.

2d, The swinging rake frame or crane, in combination with the angular rod or rock shaft and rake arm, substantially as described.

3d, The angular rod or shaft, in combination with the rake arm, operating as described.

4th, Operating the bent arm or rock shaft to raise and depress the rake, by means of the crank and pitman, substantially as described.

5th, The eccentric slotted crank arm, or its equivalent, whereby the speed of the rake is varied, as described.

6th, The shipping lever and spring, in combination with the rake gearing on standard, H, substantially as described.

75,802.—SAD IRON HEATER, NURSE LAMP, AND FOOT WARMER.—Eleazer Small, Dennisport, Mass.

I claim the box, A, perforated as set forth, and provided with the lamp, D, the movable partition, G, and the sliding cover, C, when the several parts are arranged and constructed as and for the purpose set forth.

75,803.—MODE OF ATTACHING TRACES TO WHIFFLETREES.—Samuel Smith, Plainview, Minn.

I claim the combination of the ferrule, B, with its projections, x x x x, and the ring, C, with its enlargement, f, all constructed and used substantially as set forth.

75,804.—BEEHIVE.—M. S. Snow, Forestville, N. Y.

I claim the miller box, H, provided with perforated diaphragm, r, and aperture, W, arranged with the opening, P, and wire cloth, q, substantially in the manner and for the purpose set forth.

75,805.—MACHINE FOR CUTTING TOBACCO.—L. W. W. Spencer, New York city.

I claim, 1st, The feed rolls, 11 12, conducting case, M, and cutters, d d, combined as and for the purpose herein set forth.

2d, The contracted mouth piece, B', adjacent to the cutter, d, arranged as represented relatively to the passage, M, and rolls, 11 12, as and for the purpose as herein set forth.

3d, The diverging sides, B B, of the feed box, as and for the purpose herein specified.

4th, The plates, m, constructed and arranged relatively to the feed box, B B, and feeding devices, 11 12, as and for the purposes herein set forth.

5th, The grinding surface, E, arranged and operated relatively to the cutters, substantially as represented, so as to sharpen the knives and cutters, d d, while they are in operation, substantially as and for the purpose herein set forth.

6th, The application of steam to the cutters, d d, or their equivalents, previous to each cut, by conducting the steam from a boiler, or the like, into the casing through or past which the cutters revolve, substantially as and for the purpose herein set forth.

75,806.—HAIR DRESSING COMPOUND.—Frederick Stearns, Detroit, Mich.

I claim the combination of cocoa nut fat, castor oil, and alcohol, with any appropriate perfumes, substantially in the proportions named and for the purposes described.

75,807.—MANUFACTURE OF ENAMELED CLOTH.—Edgar M. Stevens, Chelsea, Mass., assignor to himself and W. N. Ely (Trustee), Stratford, Conn.

I claim the compound rubber enamel cloth, substantially as described.

75,808.—POWER HAMMER.—Andrew Strube, Frederick, Md.

I claim, 1st, The arrangement of the treadle, E, and lever, F, with the bars, G G, socket, L, and adjustable frame, D, a, and for the purpose set forth.

2d, The arrangement of the lever, I, spring, J, and movable cross bar, Z, with the bars, H H, socket, L, and slide, N, with its screw, K, as and for the purpose specified.

75,809.—MODE FOR REMOVING TIN FROM SHEET METAL.—D. B. Sturdevant and B. H. Harmon, Chiton Springs, N. Y.

We claim, 1st, The process, herein described, of removing tin coatings from sheet metal by the combined use of hot air and steam acting upon the mass in a closed retort, substantially as herein set forth.

2d, The special combination and arrangement of the apparatus for producing the result, the same consisting of the retort, A, grate, C, hot-air pipes, D E, and water receptacle, G, the whole operating in the manner and for the purpose herein set forth.

75,810.—HAY ELEVATOR.—James B. Summerill, Penn's Grove, N. J.

I claim, 1st, The hoisting frame, A, constructed and arranged as and for the purpose described.

2d, The tripping catch, C, constructed as described.

3d, The combination, substantially as described, of the hoisting frame, A, the suspension frame, B, and the tripping catch, for the purpose set forth.

4th, The traversing frame, H, arranged and operating substantially as described.

5th, The combination, as described, with the traversing frame and supporting beam, of the locking dog, i, for the purpose set forth.

6th, The combination, substantially as described, of the hoisting block and traversing frame, with the locking catches, G, for the purpose specified.

7th, The combination, with the traversing frame and catches, G', of the spring guides, N, on the beam, for the purpose set forth.

8th, The combination, with the locking dog, I, of the lifter, I', arranged to be operated by the ascent of the block, as described.

9th, The combination, substantially as described, of the hoisting block and traversing frame, with a rope connecting the two, and so arranged as to lift the block vertically and lock it in the traversing frame, and then to unlock the frame and traverse it horizontally to the place of discharge, by a continous pull on the same rope.

10th, The tripping rope, arranged so as to dump the hoisting frame, and then to retract the traversing frame by a continuous pull, in the manner described.

75,811.—ROTARY PUMP.—Joseph A. Talpy, Somerville, assignor to himself and Meilen Bray, Boston, Mass.

I claim, 1st, The combination, with the cylinder of a rotary pump, of the eccentric piston ring, its actuating cam or eccentric, and the valve and valve arm, for regulating the admission and discharge of the fluid into and from the said cylinder, in the manner and for the purposes herein shown and set forth.

2d, The combination, with the pump cylinder and eccentric piston ring, of the valve and arm for holding the same in position, and the orifices or pipes for the induction and eduction of the fluid, arranged and operating substantially as herein shown and described.

3d, The construction and arrangement, within the pump case and cylinder, of the hinged valve and valve arm, substantially as shown and described.

75,812.—RUNNER FOR WHEELED VEHICLE.—Bjarne Thompson, Chicago, Ill.

I claim, 1st, The hinged stirrups, D, and bolts, g, in combination with a detachable runner, having in it a groove or recess fitted to the wheel, substantially as specified.

2d, The guide, C, to prevent the side slipping off the runner when operated by the direct action of the lever, I, substantially as specified.

75,813.—WOOD BORING MACHINE.—James B. Thorp, Warrenville, Ohio.

I claim the eccentric bush, E, carrying the shaft of the auger, so constructed and arranged that it can be revolved within the nut, F, and clamped in any desired position, substantially in the manner and for the purpose set forth.

75,814.—SPRING CHAIN.—Henry Turner (assignor to himself and Mellen Bray), Boston, Mass.

I claim, 1st, The combination, in a spring such as described, of the bifurcated or forked link, B, and its slotted head, with the link, A, and its slotted head, under the arrangement and for operation as herein described, so that the end of each link shall pass through and be capable of sliding in the head of the other link, as and for the purposes set forth.

2d, The combination, with the sliding links and their slotted or perforated heads, arranged as described, of the rubber cylinder or other elastic body, mounted upon said links, and interposed between their heads, as and for the purposes herein shown and specified.

3d, The combination of two or more springs, such as described, in the manner herein shown and set forth so as to form an elastic and extensible chain.

75,815.—INSULATOR FOR TELEGRAPH.—Cromwell Fleetwood Varley, New York city.

I claim, 1st, The method, substantially as described, of preventing the metallic pins of insulators for telegraphic wires from rusting, and the vulcanite covering from being defective and being injured, by coating the said metal pins with zinc, and then with tin, or an alloy of tin, preparatory to and in combination with the outer covering of vulcanite, as set forth.

2d, As an improvement on the well-known mode of securing the metallic pins, covered with vulcanite, with the insulating cups, by means of cement, and as a means of excluding moisture and preventing the evil effects therefrom, filling the pores and interstices with paraffine wax, applied substantially as herein described.

3d, Covering pieces of wire with vulcanite, for insertion at the points of support, substantially as described.

75,816.—DRILL.—Franz Vester, Newark, N. J.

I claim the spring cutter, B, the stay post, E, and guide plate, C, when used in combination with an ordinary drill or auger, A, substantially as and for the purposes described and set forth.

75,817.—STEAM BOILER FURNACE.—Robert L. Walker, Globe Village, Mass.

I claim the combination and arrangement of one or both the auxiliary steam generators with a furnace and boiler, substantially in manner and so as to operate therewith as described.

Also, the combination and arrangement of the heating chamber, E, with each of the auxiliary generators, and the furnace or furnace and boiler, arranged and combined substantially as described.

Also, the combination of the water grate with the auxiliary generator or generators, the furnace and boiler, arranged and combined substantially as described.

75,818.—CAR STARTING AND STOPPING APPARATUS.—John B. Waring, New York city.

I claim, 1st, The pawl, H, spring, I, and series of detents, b, arranged to operate in combination with a wheel, previously turned the reverse to the axle, substantially as and for the purpose herein set forth.

2d, The turning part, P, arranged relatively to the wheel, G2, pawl, H, and series of detents, b, substantially as herein set forth.

3d, Disconnecting the pawl, H, from the series of detents, b, by means of the cam-like projection, j, arranged to operate substantially as and for the purpose herein set forth.

75,819.—PUMP.—Stillman White, Providence, assignor to himself and Christopher Dexter, East Providence, R. I.

I claim a pumping apparatus, consisting of a central force pump, and two or more lift or suction pumps, the area of the first being quite equal to the area of both or all the others, and so arranged that power applied to the main or central piston rod is communicated by means of a cross head to both or all the other piston rods, so that the power of forcing the main or central piston downward is fully compensated or balanced in its ascent, substantially as shown and described.

75,820.—BED BOTTOM.—John D. Wilkinson, Plattsburg, N. Y.

I claim the arrangement of the clamp, C, and spring, F, with the cord, E, pulleys, D, and slats, H, substantially in the manner and for the purpose specified.

75,821.—CURTAIN FIXTURE.—Alfred Young, Philadelphia, Pa.

I claim the springs, g g, fastened to the frame of the window and bearing upon the curtain in such manner that the curtain will be tightly and evenly strained.

75,822.—TURNING LATHE.—Fredrik Zibell, St. Louis, Mo.

I claim, 1st, The combination of the nut, I, screw, A, and cutters, H H, with the carriage head, as above described and for the purposes set forth.

2d, The turning head, S, fig. 4, with the cutters, M M, and feed screws, in combination with the carriage head, o o, as above described and for the purposes set forth.

75,823.—LEATHER SPLITTING MACHINE.—John H. Abbott, Malden, and Jeremiah A. Marden, Boston, Mass., assignors to John H. Abbott and Charles E. Abbott.

We claim, 1st, Operating the knife of a leather splitting machine by levers driven by cams, substantially in the manner set forth.

2d, The clamp, H, constructed and operating as described, to hold the end of the knife and assist the adjustment of its tension, as specified.

3d, The combination and arrangement of the cams, D D', levers, E E', clamp, H, and knife, J, in the manner and for the purpose described.

75,824.—INSTRUMENT FOR MEASURING DISTANCES.—George Achelis, Westchester, Pa., and Hermann Poppenhausen, New York city.

We claim the instrument for measuring approximately the relative size and proportion of objects seen in a landscape, constructed and operating substantially as and for the purposes described.

75,825.—CORN PLANTER.—D. S. Ames (assignor to himself and John F. Persling), Laclede, Mo.

I claim the legs, A A', and the hopper, C, when combined with the dropping slide, D, and otherwise arranged, as herein described and set forth.

75,826.—CULTIVATOR.—Benjamin Anyan, Fitchville, Ohio.

I claim, 1st, The supplemental hounds, b b, with the draft pole, G, attached, and both said parts attached to the hounds proper, D D, as shown, when said parts are applied to or used in connection with the front running gear of an ordinary farm wagon, for the purpose specified.

2d, The attaching of the standards, i i, of the front shovels, H, to the supplemental hounds, b b, and the attaching of the standards, K, of the rear shovels, J J', to the bars, L L, connected to the hounds proper, D D, substantially as and for the purpose set forth.

75,827.—CALIPER.—Jearum Atkins, Washington, D. C.

I claim the within-described arrangement for fastening and clamping calipers, of the combined rivet and screw, A, with its nut, G, and washer, F, substantially as described.

75,828.—PROCESS FOR PRESERVING COFFEE.—B. T. Babbitt, New York city.

I claim the process of preparing coffee for use by boiling or cooking the same in olive oil, butter, or equivalent oleaginous or unctuous material, substantially as herein set forth.

75,829.—COFFEE ROASTER.—B. T. Babbitt, New York city.

I claim the thermometer, arranged in the tubular journal of the rotating air-tight vessel or cylinder, substantially as and for the purpose specified.

75,830.—GRATE.—J. L. Babbitt, Glen Cove, N. Y., assignor to the Fuel-saving Furnace Co., New York city.

I claim, 1st, An inclined grate in which the bars are so suspended and supported as that they are restrained from sliding or slipping downwards in direction of their length, while they are free to move upward in such direction, substantially as specified.

2d, The inclined bars, A, suspended and supported for motion or action as described, when formed with clips, a, that, in addition to their effecting the suspension of the bars, also serve as guiding surfaces for transverse adjustment of the latter along their supports, essentially as shown and described.

75,831.—TOY PISTOL.—J. W. Bailey, New Orleans, La.

I claim the stock, A, the barrel, B, the piece, C, and the pin, I, constructed, arranged, and combined substantially as described for the purposes set forth.

75,832.—SULKY PLOW AND HARROW.—C. N. Bakewell, Normal, Ill.

I claim, 1st, Broadly attaching the same draft to both the plow beams and carriage, by divided tugs, in such manner that each draft is independent of the other, as herein specified.

2d, The combination of the frame, A, supported upon wheels, B, driver's seat, K, and lever, F, and chains, G and H, for suspending adjustably, a plow or harrow, substantially in the manner set forth.

3d, The combination of the chains, G and H, for suspending the plow or harrow, and lateral chains, H', attached to the frame, substantially as and for the purpose set forth.

75,833.—BOILER ALARM GAGE.—Thaddeus C. Banks, Wallingford, Conn.

I claim the inverted siphon and three-way cock, in combination with the expansion tube, B, and an alarm, substantially as and for the purposes set forth.

75,834.—SAW MILL.—A. P. Barlow, Claremont, N. H.

I claim, 1st, The pivoted frame, d, in combination with the adjustable uprights, a, roller, a', and clamp screw or bar, f, constructed and operating substantially as described.

2d, in combination with the above device, the adjusting screw with its controling nuts, follower, c', and slide bolts, f1, surrounded by coiled springs, all constructed and arranged to operate as described.

3d, The upright shaft, j, friction plate, k, pivoted box, m, revolving plate, l, shaft, h, and its box, with plates, spring, and temper screw, in combination with pivoted lever, r, and pivoted lever, r', all arranged to operate in the manner substantially as described.

4th, The catches or trips, x x', on the carriage, in combination with the lever, w, and springs, levers, and shaft, j, all operating in the manner as described.

75,835.—MODE OF LUBRICATING THE SLIDES OF MULEY-SAW MILLS.—A. P. Barlow, Claremont, N. H.

I claim, 1st, The guides, g, chambered and perforated, as shown at e and d, in combination with the lubricating box, a, constructed and operating substantially as described.

2d, The guides, g, and perforated muley head, in combination with the lubricating box, a, all constructed as herein described, for the purposes set forth.

75,836.—HORSE RAKE.—A. T. Barnes (assignor to Tiffin Agricultural Works), Tiffin, Ohio.

I claim the adjusting braces, having their front ends secured to the lower sides of the draw bars, D, and their rear ends extending through the standards, C, with screw nuts upon those rear ends for tightening up the parts at will, substantially as described.

75,837.—MEDICAL PREPARATION.—T. A. Barry and B. A. Patten, San Francisco, Cal.

We claim a tonic made of the ingredients herein enumerated, mixed and compounded together in about the proportions herein described.

75,838.—DOOR LOCK.—F. H. Bartholomew, New York city.

I claim the combination of the revolving toothed disk with the sliding tumbler and spring catch, all operating as herein shown and described.

75,839.—CHARGER FOR POWDER FLASKS.—H. C. Bascom, La Crosse, Wis. Antedated March 16, 1868.

I claim the combination of the inner tube, A, provided with the spiral slot, a, the outer tube, B, provided with the longitudinal slot, b, and the screw pin, H, passing through both slots, all constructed and operating as described whereby the pressure upon the mouth piece, C, pushes forward the tube, B, in a longitudinal direction, and partially rotates the inner tube, A, causing the perforations in the ends, D, of said tubes to register for discharging the powder, as herein shown and described.

75,840.—APPARATUS FOR WORKING WAGON TONGUES.—A. J. Beach, Linden, Mich.

I claim the construction of an apparatus, for the purpose described, combining the slotted bar, C, bolt and hand nut, D, the standard transverse bar, E, the upright rods, F, the nuts, G, the gage bar, H, the lever, I, the hand nut K, the set screws, L, the ears, M, the set screws, N, the bolt, P, and hand nut R, with the bench or truss, A, or their equivalents, when arranged and operating substantially as and for the purposes described.

75,841.—SLIDING SEAT FOR CARRIAGES.—S. N. Beecher (assignor to himself and C. W. Miles), Milford, Conn.

I claim the arrangement of the spring, d, upon one end of the double seat, in combination with the catch or pivot, a, upon the other end of the double seat, so as to operate to permit the folding of the seat, as set forth.

75,842.—CHURN.—H. C. Bell, Heyworth, Ill.

I claim the combination of the tubular dasher shaft, H, two or more curved funnels, I, and the vertical partition boards, J and K, with each other and with the body, A, of the churn, substantially as herein shown and described, and for the the purpose set forth.

75,843.—SEEDING ATTACHMENT TO HOES.—E. L. Bergstresser, Hublesburg, Pa.

I claim, 1st, The adjustable vibrating disk, E, applied to and used in connection with the hoe, substantially as described.

2d, The stationary disks, B B', or their equivalent, and vibrating perforated disk, E, arranged and operating substantially as described.

3d, The disks, B B' and E, hopper, C, and seed tube, G, in combination with the hoe, A A', arranged and operating as described.

75,844.—GRAIN DRYER.—H. H. Bingham, and J. C. Hunt, Terre Haute, Ind.

We claim, 1st, The polygonal inclined reel, C, in combination with the furnace or heating cylinder, A, the same being provided with a draft-hole or holes, f, near its lower end, with a chimney, E, and with a tube, F, for the escape of moisture from the meal, as set forth.

2d, Making the shaft, B, on which the reel, C, is hung, of two pieces which are connected by a coupling, h, so that the reel can be easily removed, as set forth.

3d, Providing the reel, C, with flange, d, at its upper open end, as set forth.

4th, The cooler, K, when provided with zigzag canvas or porous sides, j, substantially as and for the purpose herein shown and described.

5th, The cooler, K, when provided with zigzag sides, j, false revolving bottom, i, stationary bottom, k, and sweepers, q, as set forth.

6th, The cooler, K, when provided with zigzag porous sides, in combination with the fan, H, inclined stationary cylinder or furnace, A, and inclined revolving polygonal reel, C, all made and operating substantially as and for the purpose herein shown and described.

75,845.—CULTIVATOR AND SEEDER.—Lewis Bishop, Talladega, Ala.

I claim, 1st, The employment of the spring, S, as constructed, or other equivalent device, for obtaining in cultivators or seeders, of whatever kind or construction, a vertically yielding tension, substantially as and for the purpose herein shown and described.

2d, The plates, m, operated substantially as and for the purpose herein shown and described.

3d, The hopper or trough, O', with its agitator, l, substantially as and for the purpose shown and described.

4th, The star wheel, J, or other equivalent device for lifting the agitator, l, substantially as and for the purpose herein shown and described.

75,846.—MACHINE FOR SAWING STAVES.—W. R. Bishop and O. D. Bishop, Harrison, Wis.

We claim the combination of the apron, E, with the bent shaft, F, whereby the block, from which the staves are cut, is depressed to bear against the teeth of the saw, P, to cut a stave of uniform thickness, constructed and operated as herein shown and described.

75,847.—ATTACHING DOOR KNOBS TO SPINDLES.—Wm. Boch, Newtown, N. Y.

I claim the metallic socket, B, constructed with split sides, c, for the entrance of the wedges, C, so arranged that its interior socket formation remains the same, while its sides are forced outward by driving in the socket to form a rigid connection between it and the knob, substantially as shown and described for the purpose set forth.

75,848.—MACHINE FOR MEASURING CLOTH.—W. F. Boggs (assignor to himself and John T. Bennett), Petersburg, Ill.

I claim, 1st, The drum, F, cord, i, and drum, f', when combined with the pivoted clock frame, E, in the manner described, and for the purpose of reversing the same, as set forth.

2d, The combination and arrangement of the pivoted clock frame, E, its tipping bar, e', and the adjusting bar, d, as and for the purpose set forth.

3d, The friction roller, D', and its spring frame, d d', in combination with the measuring roller, D', as shown and described.

4th, The roller, G, its screw bearing, g, friction pulley, g1, cord, g2, and weight, W, when combined and operated as herein described and set forth.

75,849.—SECRET BED.—C. F. Bowers, Boston, Mass.

I claim the combination with a book case or other upright piece of furniture of a bed frame having folding rails, and flanges for supporting the bed, said bed being made in sections, and so as to cross the joints in the rails, and the rails and bed being folded and arranged together within the bottom of a case, a, when the bed is not in use, substantially as set forth.

Also, combining with the upper part of the case, a, the sliding mirror, substantially as set forth.

75,850.—CORN AND SEED PLANTER.—E. C. Brown, Crawfordsville, Ind.

I claim, 1st, The two arms, B and B', and the spring, Q, when the same are constructed, combined, and used in manner and form as aforesaid.

2d, The combination of the said B and B' and Q, with the said lever, A A, and the said sliding bottom, R R, for the purpose and in the manner substantially as set forth.

3d, The whole combination, herein set forth, when the same is constructed, combined, and used, in its several parts, substantially as set forth.

75,851.—GUIDE FOR CORN AND SEED PLANTERS.—E. C. Brown, Crawfordsville, Ind.

I claim the index and guide-staff, hereinbefore described, when the same is constructed in manner and form in its several parts, and used for the purpose and in the way substantially as set forth.

75,852.—SASH STOP.—R. E. Buchanan, Carrollton, Ill.

I claim the lock, c, of segmental form, provided with thee axle, c2, and knob C', operating solely as a handle, the middle part of the rim of which lock is smooth, while the end parts are serrated, and all three parts of which rim are at such distances from the center of motion of the lock as to form a double-acting fastener, substantially as described.

75,853.—METHOD OF HANGING WINDOW SASHES.—Thomas Bullivant, London, England.

I claim the method of attachment of the weight cords, D, to the sashes, through the medium of the adjustable plates, G, constructed, arranged, and applied in the manner shown, so as to admit of being adjusted to serve as guides for the sashes, and also to admit of the sashes being readily removed from the window frame when desired.

75,854.—LOCK FOR DRAWERS, ETC.—A. G. Burton, Rochester, N. Y.

I claim, 1st, In combination with the key guide, D, and friction tumblers, G G, the counter cams, g h, the former operating to retain the key guide and key, as described, and the latter to distribute the tumblers, substantially as set forth.

2d, The combination with the key guide, D, of the shielding barrel, C, of larger diameter, closed by the head, c, and so arranged as to leave ample space between the body of the guide and the barrel, for the operation of the wings, g h, or their equivalent, substantially as and for the purposes set forth.

3d, So arranging the key, E, with relation to the arm, e, and shoulder, b, that when the said arm relieves the said shoulder to act upon the bolt, the key will come opposite, or nearly opposite, the pivot, m, where it can have the least action upon the tumblers, as herein set forth.

4th, The wing, g, and the ledge, l, when employed, in combination with the key guide, D, and key, E, to prevent its withdrawal when the lock is unlocked as herein set forth.

75,855.—COMPOSITION PAVEMENT FOR STREETS.—J. W. Byrnes, Washington, D. C.

I claim concrete compounded from the ingredients named, and used in combination with stone in the construction of pavements, substantially as set forth.

75,856.—CORSET CLASP.—W. B. Cargill, New Haven, Conn.

I claim the herein described corset clasp trimming, consisting of the plate, provided with the button, composed of the two parts, C and D, in the manner substantially as herein set forth.

75,857.—COMBINED WEATHER STRIP AND DOOR ALARM.—G. W. Carpender, Jarvis, Ind.

I claim the plates, C and g, cam, D, rod, E, plate, F, cam, G, spring, K, clapper, J, and bell, H, all constructed, arranged, and operating in the manner described, whereby an alarm is given by the weather strip, as set forth.

75,858.—WEEDING MACHINE.—Nicolaus Carstens and Chas. Carstens, New York city.

We claim, 1st, Arranging a revolving rake in rear of the cutter of a weeding machine, substantially as and for the purpose herein shown and described.

2d, Pivoting the cutter of a weeding machine to the frame so that it can swing freely on the pivots, substantially as herein shown and described.

75,859.—WASHING MACHINE.—John F. Chambers, Calistoga, Cal.

I claim the combination of the toothed beaters or rubbers, E E, with the

yielding corrugated metallic bottom, C C, constructed and operating substantially as described.

75,862.—CURTAIN FIXTURE.—James Chase, Rochester, N. Y.

I claim connecting the end of the curtain roller with a swinging lever, C, so as to be thrown out bodily, and combining therewith the ratchet wheel, E, and detent, n, in such a manner that the weight of the roller and curtain themselves serve to re-engage the parts when thus thrown out, substantially as herein set forth.

Also, adapting the bearing, B, and lever, C, without fitting, by means of the extension, e, with slot, d, and shoulder, f, of the former, and the bit, l, and bearing, k, of the latter, the whole arranged and operating in the manner and for the purpose herein set forth.

Also, the scroll flange, p p', of bearing, B', arranged as described, and operating in the manner and for the purpose set forth.

75,861.—MANUFACTURE OF WHITING AND PARIS WHITE.—W. W. Chipman, Brooklyn, N. Y., assignor to himself and W. D. Gookin, New York city.

I claim the within-described process of manufacturing Paris white and whiting from limestone, by the three several steps of burning, slaking, and recarbonizing, substantially as and for the purposes herein set forth.

75,862.—BLIND HINGE.—C. B. Clark, Buffalo, N. Y. Antedated Oct. 18, 1867.

I claim a self-locking blind butt, when provided with flange, n, recess, o, stop, l, and abutting portion, m, constructed, arranged, and operating substantially in the manner and for the purposes set forth.

75,863.—DAMPER FOR STOVEPIPE.—Aaron Colton, Sycamore, Ill.

I claim the damper, constructed as described, consisting of the right angular shaft, C, passing transversely through the stovepipe, A, and secured to the under side of the damper, B, the arms, a a', of said shaft, upon each side of the stovepipe, being notched to receive the weight, D, as herein described for the purpose specified.

75,864.—HAMES FASTENER.—E. A. Cooper, Lancaster, N. Y.

I claim, 1st, The two hook bars, B B, one or both provided with rack teeth, in combination with a guiding sleeve, C, and operating pinion, d, substantially as set forth.

2d, The pawl, and their ratchet wheel in combination therewith, operating substantially in the manner and for the purpose set forth.

75,865.—MILL STEP.—Christopher Corbit, Christiana, Pa.

I claim placing around the toe of a spindle a series of wedge-shaped followers, C C C C, constructed with boxes, B B, screws, a a a a, movable piece, G, steel plate, D, and operating as described, in combination with the recess, e e, in the plate, A A, all arranged for the purpose herein specified.

75,866.—CAR COUPLING.—S. H. Cowles, Oakville, Conn.

I claim the slotted metal guide, C, placed within the mouth of the drawhead, A, as specified, and used in combination with the pivoted hook, B, the front of which is beveled from top to bottom, all constructed and operating as set forth.

75,867.—HARROW.—Isaac Crum, West Chester, Ohio.

I claim the combination of the harrow, B, with the sled, H, and the adjusting mechanism, l d G, or its equivalent, arranged and operating substantially as and for the purpose described.

75,868.—MARINE STEAM GOVERNOR.—John B. Cullen (assignor to himself and John P. Cheston), Philadelphia, Pa., assignors to themselves and John A. Fulton.

I claim a propeller shaft arranged within a vessel as set forth, in combination with a steam cylinder and piston, and with the devices described, or equivalent devices, whereby the movements of the shaft are communicated to a valve regulating the passage of steam to the engine, all substantially as specified.

75,869.—CURTAIN FIXTURE.—Thomas Curley, Troy, N. Y.

I claim, 1st, The ratchet, B, the pawl, E, and the arm, C, either with or without a loose pulley, D, arranged substantially as described for the purposes set forth.

2d, In combination with the above, the plate A, for the purpose described.

75,870.—BRACE FOR BIT.—Chas. M. Daboll (assignor to the Wilson Manufacturing Company), New London, Conn.

I claim, 1st, The jaws, C, constructed as described, having a semicircular base inclining outward, and provided with the T-shaped shank, fitting without pivots in the T-slot of the stock, A, as herein described, for the purpose specified.

2d, The jaws, C, constructed as described, in combination with the screw nut, B, when the inner inclined surface of such nut bears equally at all points around the inclined circumference of the jaws C, provided with the T-shanks, as herein described, for the purpose specified.

3d, The stock, A, when provided with the T-slot adapted to receive the T-shank of the jaws, C, in combination with the nut, B, whose screw thread is above the jaws, as herein described, for the purpose specified.

75,871.—GANG PLOW.—Geo. J. Dahl, Stockton, Cal.

I claim, 1st, A plow standard constructed substantially as shown and described.

2d, The orifices, n n, of the offset, m, as and for the purpose set forth.

3d, The tenon hooks, n' n' of the adjustable land side, m', as and for the purpose set forth.

4th, The head piece, h, of the standard, D, constructed as described, and made with the central opening, i, as and for the purpose set forth.

5th, The adjustable land side, m', in combination with the standard, D, arranged in the manner described.

6th, The scraper, e, in combination with the caster wheel, d, as and for the purpose set forth.

7th, A series of plows constructed and operating as set forth, in connection with a frame of the kind described.

75,872.—LATHE CHUCK.—F. Davison, Richmond, Va.

I claim the combination of the pivoted shell, provided with holding jaws, the slotted disk or face plate, and the tightening screw, substantially as and for the purpose specified.

75,873.—BRAKE FOR LOCOMOTIVES.—Auguste De Bergue, Paris, France.

I claim, 1st, The combination of the external air adit, B, and reservoir, E, with the motive cylinder and piston of a locomotive, substantially as described and specified.

2d, The combination of the rod, N, with the motive cylinder, whereby to introduce a jet of steam to lubricate the interior surface of the cylinder while steam is shut off, and while air is in the cylinder, substantially as herein shown and described.

3d, The combination of the external air adit, B, with the exhaust pipes, funnel, and cylinder of a locomotive, substantially as described and specified.

4th, The arrangement of the air reservoir, E, substantially as shown and described, with the motive cylinders of a locomotive, whereby to receive and retain the compressed air, as set forth.

5th, The escape valve, H, substantially as shown and described, in combination with the air reservoir, E, and motive cylinders of a locomotive, whereby to permit the escape of air, as set forth.

6th, The exit valve, I, when combined with the air reservoir E, and motive cylinders of a locomotive, substantially as shown and described.

7th, The arrangement of the valve D, substantially as shown and described, with pipes, i and F, and opening, n, whereby the motive cylinders of a locomotive are rendered available in compressing the air, as set forth.

8th, The arrangement of the pipe, n, with relation to the air reservoir, E, supplementary air cylinder and piston, o, friction brakes, q, and arm, p, substantially as herein described and specified.

75,874.—STEAM CARRIAGE.—Zadoc P. Dreder ick and Isaac Grass, Newark, N. J.

We claim, 1st, The combination of the crank, E, connecting rods, F, bell crank levers, G' G', and rods, H H, the said parts being arranged to produce an alternately stepping motion, substantially as described.

2d, The combination of the rods, G' G' and H H, with the rods, L L and M M, and foot pieces, I I, substantially as described.

3d, The combination of the rods, H H and Q Q', substantially as and for the purpose set forth.

4th, The foot piece, I, pivoted to the rods, H, centrally, and at the heel to the rod, M, when said rods are so actuated as to cause an oscillating motion of the foot, substantially as and for the purpose set forth.

5th, The combination of the lever, N, rods, P and Q, with the rods, G' and H, substantially as and for the purpose set forth.

6th, The arrangement of the circular support, U, to the machines, and the cords, S, and tiller, T, substantially as set forth.

75,875.—TIPPING UMBRELLA FRAME.—John M. Doubleday, Montclair, N. J.

I claim the covering or overlaying, with metals or other substances, the ends of ribs employed in umbrella or parasol frames, substantially as and for the purposes set forth.

75,876.—TOY RAILROAD AND CAR.—Beriah Douglas, Appleton, Wis.

I claim the invention of placing the axles of this hand running car within and through the box or body, so as to drop the floor down very near to the rails, for the reasons above specified.

Also the invention of turning up the ends of car rails, essentially in the manner and for the purposes mentioned.

Also the invention of the hand supports, and ropes or rods as combined with the rails, essentially and as the best means for running the car by the hands of the riders for pleasant and healthful exercise.

75,877.—BAG FASTENER.—F. H. Drake, Kenosha, Wis.

I claim a bag fastener consisting of the strap, D, and buckle, B, united, and secured to the bag by means of the metal plate, A, or its equivalent, substantially as described.

75,878.—RAILROAD CAR VENTILATOR.—Isaac Dripps, Fort Wayne, Ind.

I claim, 1st, The combination of the wings, E, or a butterfly valve, the bifurcated bell crank lever, H, and segment, L, arranged to operate substantially as and for the purposes described.

2d, The combination of the tapering tubular hood, B, pipe, A, and the regulating valve placed in the latter, arranged to operate substantially in the manner and for the purpose set forth.

75,879.—LOCKING KNOB LATCH.—Simeon W. Drowne, Norwich, Conn.

I claim the combination of the latch bolt, B, spring, F, sleeve, K, pins, I, connecting bar, L, tumblers, N, with projections, P and R2, and knob key, R, all constructed and operating as described for the purpose specified.

75,880.—CLAMP FOR DOOR AND SASH.—Elijah F. Dunaway, Cincinnati, Ohio.

I claim, 1st, The construction of the stops, a, and operating in the manner as herein described, for the purpose specified.

2d, The combination of the oscillating bars, A', the sliding bar, C, cam levers, B, rods, a', springs, b, and rack bars, D, as herein described, for the purpose specified.

3d, The rack bars, D, in combination with the carriage, O, and sliding bars C, as herein described, for the purpose specified.

4th, The clamping of the sash or doors upon the carriage, O, by means of the stops, a' a', mounted upon it, and bar, G, having stop, F, and working in slot, o, and operated by cam lever, N, in the manner and for the purposes substantially as above set forth and described.

75,881.—FURNACE.—Wright Duryea, Glen Cove, N. Y., and Wm. Ennis, Hudson, N. Y.

We claim, 1st, In a furnace of the character described, and composed of a basket grate, A, with feed openings for the fuel down either side, and reflector, B, the combination of a chamber, C, supplied with air from the exterior, and communicating with the fireplace by openings or perforations, b, made in or through the reflector, substantially as specified.

3d, The combination of the close fuel chambers, D D, with the basket grate A, with which they are in communication, by openings, c, and separated from each other by an intervening space or chamber, C, essentially as shown and described.

75,882.—MACHINE FOR FELLING TREES.—A. Edwards, New Haven, Conn.

I claim the vibrating cutter head, J, provided with spur cutters, d d, and the cutters, i i, and operating so that each of the cutters, i i, cuts from the path marked by the spur cutter, d, previously moved in an opposite direction by the oscillation of the pivoted lever, H, substantially as specified.

75,883.—CORN PLANTER.—R. S. Edwards, Savannah, Mo.

I claim, 1st, Constructing the frame of the machine of two parts, A B, connected by a bolt, a, in connection with the arm, E, on part, B, provided with the pendent pin, c, to fit in the plate, C, of the part, A, all arranged substantially as and for the purpose set forth.

2d, The seed distributing device consisting of the two valves, f f', in the spouts, L, of the seed box, K, arranged as shown, and operated by the levers, M, and the cams or wipers, h, from the front axle, H, substantially as shown and described.

3d, The adjustable horizontal bar, O, connected with the lever, R, and provided with the notched arms, Q, in combination with the lugs or projections, e, on the flanges, l, of the wheels, G G, all arranged substantially as and for the purpose specified.

75,884.—SEWING MACHINE.—W. St. George Elliott, M. D., Morristown, N. J.

I claim the curved arm, F, having the presser, J, pivoted lever, L, having feed foot, K, and arm, M, adjustable bent lever, N, and spring, P, in combination with the sliding sleeve, G, needle bar, I, and collar, O, all constructed and arranged to operate as herein shown and described.

75,885.—TOY PISTOL.—Wm. H. Emory, Ashburnham, Mass. Antedated March 16, 1868.

I claim the combination of the spring, C, with the slotted barrel, B, and the trigger and lock, F, the parts being arranged substantially as and for the purpose herein described.

75,886.—ACOUSTIC TELEGRAPHING.—Lancelot H. Everitt, New Orleans, La.

I claim an acoustic battery for telegraphing, a machine which creates and modulates sounds, that, when arranged and sounded under specific symbolic formulæ, they are made to represent and express all the letters of the English alphabet and all Arabic notations, and when thus evoked into existence the machine reflects these sounds and transmits them through naked wire, buried in the land or water, to their destination, where they impart their various interpretations with such distinctness and order to the auditor who receives them, as to become the most important and efficient commissioners of intelligence.

Also the mode of eliciting two different tones of sound from the air, by means of the chorda tympani, the malleus, the key, the incus, the stapes; of reflecting them from the polished phonic fossæ, of conducting them to the acoustic messenger through the nipple of the incus, and transmitting them through non-insulated wire to the cochlea, vestibule, and auricular, which delivers them to the auditor with precision and regularity.

Also this mode of associating these two modulated tones, and arranging them under five different orders of sound, expressive of letters and notations, as herein described, and this method of using similar and dissimilar silent intervals of time in separating and combining sounds, thus giving force and decided character to the symbolic formula of a letter or notation when echoed from the phonic fossa and transmitted through naked wire to the end of the auricula.

Also this mode of creating and regulating these two primary orders of sound, and other orders evolved from them, systematically, by means of a diatonic staff and two bars attached thereto, and signalizing different sounds by red and blue colored disks, which represent two very dissimilar tones that are convertible into intelligent symbols, as herein described, or by any other means substantially the same, and which will produce the intended effect.

75,887.—PACKING TOBACCO.—M. Falk, New York city.

I claim a packing of cut smoking tobacco, the envelope of which is a cloth bag, provided with a flap, a, and a suitable fastening, b, substantially as shown and described.

75,888.—WEFT STOP MOTION FOR LOOMS.—Joseph C. Fifield, Lowell, Mass., assignor to W. N. Ely, Stratford, Ct.

I claim, 1st, The weft stop motion mechanism, constructed, arranged and operating, as to its several parts, in the manner and by the means described, in combination with the lay, as set forth.

2d, The finger device constructed and arranged in the manner and operated by the means described.

3d, The combination with the lay of parts, L, n, m and m', when constructed and arranged as and for the purposes set forth.

75,889.—TELEGRAPH INSULATOR.—J. L. Finn, Elyria, Ohio.

I claim, 1st, The combination and arrangement of the bell-shaped shell, A, forked shank, C, the adjustable toothed conductor, D, and conducting wire, R, substantially as described for the purpose specified.

2d, Securing the shank, a, to the bearer, X, by means of the tangential pins T, passing through a groove in the side of the said shank, substantially as described for the purpose specified.

75,890.—MACHINE FOR STUFFING LEATHER.—Ferdinand Fischer, Cambridge, Mass.

I claim combining with the stuffing wheel a flat steam heated box, i, placed in juxtaposition with and parallel to the inner surface of one of the heads of the wheel, and arranged to receive and discharge steam, substantially as set forth.

Also, connecting this box, i, with the opposite hollow journal and its steam pipe, f, by a pipe, k, arranged substantially as set forth.

Also, placing a box, l, against each head, a, connecting the two by the pipe k, substantially as set forth.

Also, combining with one or both of the heaters, i, a waste pipe or waste pipes, m, substantially as shown and described.

75,891.—WOOD BORING MACHINE.—Harvey Fleming, Vienna, N. J.

I claim with the stationary auger, C, the carriages, D and E, moving laterally and horizontally, the carriage, E, being movable simultaneously with and also independently of the carriage, D, all constructed and arranged to operate substantially in the manner and for the purposes as set forth.

75,892.—WATCH CASE CUTTER.—John Fortenbach, Jacob Fortenbach and Joseph Fortenbach, Carlstadt, N. J.

We claim, 1st, The improved machine for cutting the hinge recesses in watch cases, made and operating substantially as herein shown and described.

2d, The up and down adjustable sliding turret, D, when combined with the lever, d, up and down adjustable block, E, and clamping plate, F, all made and operating substantially as herein shown and described.

3d, The block, E, for supporting the covers or centers of watch cases, when formed for the said object, substantially as herein shown and described.

4th, The up and down adjustable sliding turret, when carrying the cover or center of the watch case, in combination with the longitudinally adjustable rotary cutters, by which the hinge recesses are cut into the covers or centers, substantially as herein shown and described.

75,893.—MACHINE FOR MAKING CARRIAGE AXLES.—Benj. W. Foster (assignor to Franklin L. Sheldon and Charles L. Sheldon), Auburn, N. Y.

I claim, 1st, The combination of the shaping rollers which form the journal and taper the bar of an axle, with the dies which form the collar by lengthwise pressure of the bar, substantially as described.

2d, A pair of rolls for acting simultaneously on opposite surfaces of a bar of metal, having dies, a b c, arranged in relation one to the other and to the rolls, substantially as herein set forth.

3d, In combination with the die rolls claimed in the above second clause, the cutting edge, d, as described.

4th, In combination with the die rolls claimed in the above second clause a pair of rolls arranged perpendicularly thereto, and for joint action therewith, substantially as described.

5th, In combination with a pair of die rollers the devices herein described, for accommodating dies of greater or less thickness, substantially as set forth.

6th, Mounting one set of rolls upon vertical shafts, which revolve in bearing upon sleeves on the other shaft, substantially as and for the purpose described.

7th, In combination with die 2, and socket, 4, or their equivalents, the pointed screw, 13, as and for the purposes set forth.

8th, The improved machine as a whole, constructed and operating substantially as set forth.

75,894.—STUMP EXTRACTOR.—C.E. Galligan, Paw Paw, Mich.

I claim the combination and arrangement of the runners or bearings, A A, the standards, B B, etc., the cross beam, C, the hooked rods, D D, the lever, T, provided with the slotted openings, I I, the double sheaves, E E, the ropes F F, the double blocks, H H, the links, K K, the pins, a' a', etc, and the grub hooks, O O, all arranged substantially as described, and for the purpose designed.

75,895.—GANG PLOW.—Wm. S. Gatlin and Benj. R. Hubbard, Green Top, Mo.

We claim, 1st, The construction and arrangement of the draws bars, b, the links, C, the levers, C1, and the racks, C2, with reference to the frame, A', and the plow beams, B, substantially as and for the purpose specified.

2d, The device, D, D1, D2, D3, and d, for lifting the plows up out of the ground, substantially as described and set forth.

75,896.—MANUFACTURE OF WASH BOWL.—John Gilbert and Peter M. Sofield, Newark, N. J.

We claim the circumferential rebate, a', around the base, a, substantially as shown and described, for forming the connection between the base and the upper part, c, of the vessel, as set forth.

75,897.—BLOCK FOR CUTTING AND SHAPING BRIMS OF HATS.—F. R. Going (assignor to himself and D. Wilcox), Boston, Mass.

I claim, 1st, The recess, H H', formed immediately around the band block and between the crown block and cutter guide, E, substantially as described and for the purpose set forth.

2d, The cutting edge, a b c d, of the guide E, against which the shoulder of the cutting gage, K, rests, in the operation of cutting the curl, in combination with the hat block, substantially as described and for the purpose set forth.

75,898.—COATING METAL.—John D. Gruneberg and Samuel H. Gilbert, Spring Mills, N. J.

We claim the within mode of coating or plating hard metals, substantially as described.

75,899.—PORTABLE UPRIGHT FLUE BRAZER.—W. Grunert and G. E. Bingham (assignor to themselves and O. L. Packard), Milwaukee, Wis.

We claim the furnace, C, capable of vertical adjustment, for adapting the heat to the seams of pipes or flues, when brazing in an upright position, substantially as herein represented.

75,900.—SPRING BOTTOM FOR BOOTS AND SHOES.—Charles S. Hale and Oliver C. Hubbell, Cleveland, Ohio.

We claim, 1st, In combination with a spring, the plates, A D, and boot or shoe, substantially as and for the purpose described.

2d, In combination with the above, the elastic heel, B, as and for the purpose set forth.

75,901.—PLOW.—Wm. E. Hardin, Bowling Green, Mo.

I claim, 1st, The lifter, D d1 D1 D2, when constructed and operated as described and set forth.

2d, The adjustable axle, A' a, when constructed and employed in the manner shown and described.

75,902.—ABDOMINAL AND UTERINE SUPPORTER.—Mrs. Eliza J. Harding, St. Louis, Mo.

I claim the pads, A A', and the bands, a a1, when constructed and employed as herein shown and for the purpose set forth.

75,903.—HINGE FOR SHEET METAL BOX.—Charles J. Hauck, Williamsburg, N. Y.

I claim the wire, b, with its curved ends passing through holes in the rim of the box, or cover, and fastened thereto by solder, in combination with the sheet metal loop, a, having its shanks passing through the rim of the box or cover, and fastened thereto by solder, as shown and described.

75,904.—OIL CAN.—Charles J. Hauck, Williamsburg, N. Y.

I claim the arrangement of the gage or stop, E, in combination with the vent tube, D, and spout, C, of a hermetically closed can, A, substantially as and for the purpose described.

75,905.—HORSERAKE.—Horace R. Hawkins, Akron, O.

I claim, 1st, The combination with the rake head, F, and bar, O, of the teeth J, loops, 4, and springs, 5, arranged for joint operation, substantially as set forth.

2d, The combination with the rake head, F, and the peculiarly constructed teeth, J, of the bars, O, and, n, links or loops, 4, and springs, 5, substantially as and for the purposes set forth.

3d, The combination with the rake head of teeth held to the head by springs or their mechanical equivalents, under the arrangement described, whereby the said teeth will be supported, so that when their lower ends are raised by coming in contact with obstructions, their upper ends will partially revolve about the head, substantially as set forth.

75,906.—CARDING MACHINE.—Joseph Haythorn and Joseph Martin, Thompsonville, Conn.

We claim imparting a reciprocating motion to the workers or strippers of a carding machine, substantially in the manner and for the purpose herein shown and set forth.

75,907.—EXTENSION AND STEP LADDER.—S. E. Hewes, Albany, N. Y.

I claim the step, C, in combination with the ladder, substantially as shown and described.

75,908.—CARRIAGE AND SLEIGH TOP.—D. K. Hickok, Merrisville, Vt.

I claim the circular flanged plate, J, with its angular divisions, M, clips, L, and slide, G, in combination with the several parts of a carriage and sleigh top, constructed as described.

75,909.—PEN.—Robert Hirst, Hudson, N. Y.

I claim the flap, B, when pivoted at its widest end to the concave side of the pen, A, corresponding in shape to the outer part of said pen, A, and held thereto when in use by atmospheric pressure, as herein described for the purpose specified.

75,910.—CAR VENTILATOR.—Robert Hitchcock, Springfield, Mass.

I claim, 1st, In a car ventilator, the combination of the deflector, A, deflector, D, and vent, F, arranged in an outside case, substantially as shown.

2d, The arrangement of alternately reversed ventilators, 1, 2, 3, 4, etc., producing alternately exhaust and supply, as the car moves in either direction, respectively.

75,911.—CULTIVATOR.—Christopher Hoagland, Delavan, Ill.

I claim, 1st, The combination of the jointed plow standards, C C', plates, d, links, K, scrapers, r, and connecting links, l k, as herein described for the purpose specified.

2d, The links, l k, or other equivalent device for connecting the front and rear standards for the purpose of operating the latter simultaneously with the former, substantially as shown and described.

3d, The plates, d, with their bolts, f, or other equivalent device, for forming a hinge between the standards, C C', and plows, P P', substantially as shown and described.

4th, The spring catch, O, or its equivalent, for holding the standards forward, substantially as and for the purpose shown and described.

5th, The rod, L, for vibrating the standards, C, laterally, substantially as shown and described

6th, The arms, N, for operating the rod, L, substantially as shown and described.

7th, The rod, I, with its bend, J, or other equivalent device, substantially as and for the purposes shown and described.

8th, The laterally vibrating standards, C, in combination with the rod, L, and bend, J, substantially as and for the purposes shown and described.

9th, The plow cleaner, r, or other equivalent device, attached and working substantially as shown and described.

75,912.—APPARATUS FOR CRUSHING AND PULVERIZING STONES AND OTHER HARD SUBSTANCES.—Frederic E. Hoffmann, Berlin Prussia.

I claim, 1st, The combination of the rake or scraper, j, carriage, D, crusher, B, bed, C, and the pneumatic apparatus, constructed and operating substantially as and for the purpose described.

2d, The lips or flanges, m n, extending over the surfaces of the crusher, B, and bed, C, substantially as and for the purpose described.

75,913.—ICE CRUSHER.—John W. Hollingsworth and Horatio D. Weaver, Mount Vernon, Ind.

We claim the sliding cup, C, in combination with plunger, D, constructed and arranged substantially in the manner set forth.

75,914.—MEAT BROILER.—Lewis Holmes, Keene, N. H.

I claim a broiler for broiling meat, and for all the purposes for which broilers are used, composed of the parts, A and B, hinged together, the whole rotating within the bend of a coil, C, and operated by a handle, D, substantially as shown and described, and for the purposes set forth.

75,915.—MARINE PAINT.—Gilman Hook, West Harwich, Mass.

I claim the combination of white lead and boiled linseed oil with dissolved caoutchouc, or gutta percha, in the production of a paint, substantially as herein described.

75,916.—CARRIAGE BOW SETTER.—Henry C. Hoover, Green Castle, Pa.

I claim, 1st, The sliding boards, E E, as and for the purpose set forth.

2d, The slotted holders, d d, in combination with sliding boards, E E, substantially as described.

3d, The block, C C, in combination with boards, E E, substantially in the manner specified.

4th, The gage bars, D D, substantially as set forth.

5th, The combination of sliding blocks, C C, boards, E E, holders, d d, and bars, D D, all arranged as described.

75,917.—OYSTER KNIFE.—G. W. Huffnagle, New Hope, Pa.

I claim the knife composed of the handle, A, cross bar, C, and blade, B, when constructed in the manner and for the purpose substantially as herein set forth.

75,918.—FAUCET.—George R. Huntley, Taunton, Mass.

I claim in combination with the barrel and plug, the eccentric ring, d, vent, g, pin, e, and stops, f f, all constructed and arranged to operate substantially in the manner as and for the purpose specified.

75,919.—MODE OF CASTING PLOWSHARES.—Jonathan Hunton (assignor to himself and L. Freeland), Hackensack, N. J.

I claim the employment or use, with the chill plate, A, for casting plowshares, of the removable or detachable parts, B D, either or both, arranged substantially as and for the purpose set forth.

75,920.—FURNITURE EDGE.—Franz Hutwohl, New York city.

I claim as a new article of manufacture a stuffed furniture edge, A, the covering canvas, b, of which has its threads arranged diagonally across the surface of the roll, A, substantially as herein shown and described.

75,921.—DRESS TRIMMING.—G. A. Johnson, Oxford, Conn.

I claim the dress ornament, formed in two parts, covered as described and secured together by the disk, C, as set forth.

75,922.—BREADMAKING MACHINE.—Marcus A. Jones, Frankfort, Ky.

I claim the combination of the rollers, a a, sliding bottoms, A and G, and collar frame, D, all substantially as shown and described and for the purpose set forth.

75,923.—SASH AND DOOR BUTTON.—Morton Judd, New Haven, Conn.

I claim, 1st, The socket, b, with the flange, i, and rim, o, in combination with the fastener or button, a, having a circular recess setting over the rim, o, as and for the purposes set forth.

2d, The helical spring, x, in a cavity in the socket, b, in combination with the button, a, and rim, o, as and for the purposes set forth.

3d, The plate, f, with its stops, g and h, in combination with the button, a and socket, b, as and for the purposes specified.

75,924.—FASTENING WEARING APPAREL, SHOES, ETC.—Roswell Judson and Wm. H. Lynch, Matteawan, N. Y.

I claim as a new article of manufacture the herein described garment fastener, the same consisting of a series of solid, double-jawed slides, provided with perforations, e e, and combined with a ribbon or band, which is applied and held to the said slides in the manner and for the purposes herein shown and specified.

75,925.—GANG PLOW.—John L. Keasor, Laconia, N. H.

I claim, 1st, The combination of the vertical standards, M, eye bolts or keepers, n', vertical bars, N, horizontal bars, O, and keepers, R S, with each other, with the plows, G or H, and with the longitudinal bars, F, substantially as herein shown and described, and for the purpose set forth.

2d, In combination with the shaft, U, arranged as shown and described, the cams, V, chains, T, and horizontal bars, F, all constructed and operating as described, whereby the plows, G H, are raised and lowered.

3d, The construction, combination and arrangement of the adjustable lever, W, with the shaft, U, for the purpose of operating said shaft, substantially as herein shown and described.

4th, The combination of the draft chains, I, with the bolster, E, and forward ends of the plow beams, g' or h', substantially as herein shown and described.

5th, The combination of the chains, J, with the forward ends of the plow beams, g' or h', and with the longitudinal bars, E, substantially as herein shown and described.

75,926.—BED BOTTOM.—Andrew W. Kendrick, Xenia, Ohio

I claim, 1st, The arrangement of outer frames, B C B' C', and inner and adjustable frame, b c b' c', racks, L L, and pawls or levers, K, in combination with the series of slats, F, supported transversely on the helical springs, E, resting upon the ledges, B B' and b b', of the outer and inner frames respectively, substantially as set forth.

2d, In the described combination, the graduated or decreasing series of helical springs, E, with the stationary and adjustable frames, B C B' C', and b c b' c', respectively.

75,927.—PISTON PACKING.—Julius King, Hoboken, N. J.

I claim a piston packing, composed of four or more uncut rings, B B, each secured to the piston by means of a screw, C, or its equivalent, and all made and operating substantially in the manner herein shown and described, the rings having either perfectly concentric or irregular inner edges, as set forth.

75,928.—FUR COLLAR.—William King, New York city.

I claim the combination of the spring, A, and the springs or stays, B B, or their equivalents, with a lady's fur collar, in the manner and for the purpose herein before set forth.

75,929.—MANUFACTURE OF GLYCERIN.—Otto Laist, Cincinnati, Ohio.

I claim, 1st, The employment of any oleaginous substances, fat, or fatty acids, in the refinement or rectification of glycerin, substantially as and for the purposes set forth.

3d, The employment of a jet of superheated steam, introduced into a glycerin retort or still, substantially as and for the purposes set forth.

75,930.—SADDLE AND HARNESS.—R. M. La Rue, Andersonville, Ind.

I claim the drum, B, constructed as described, its front end receiving the ferret, and its rear end slotted for the passage of the strap of the harness, when the latter is wound within the drum upon the shaft of the ratchet, C, and thumb screw, D, as herein described for the purpose specified.

75,931.—GARTER.—Joseph A. Latham, New Haven, Conn.

I claim the herein-described garter, constructed with the spring, a, and provided with three or more cushions or pads, C, with spaces between them upon the inside of the band, as an improved article of manufacture.

75,932.—LAMP SHADE.—N. F. Leete, Middletown, Conn.

I claim the combination and arrangement of the ring, A, with one or more sockets, a, so as to receive the arm, B, the said arm having attached thereto the arms, C C, pivoting the shade, D, so that the said shade may be turned to a different inclination on the pivots, d, and to different positions to the right or left in the sockets, a, as and for the purpose herein set forth.

75,933.—LATHE CARRIAGE.—George W. Lewin, Worcester, Mass.

I claim the arrangement of the endless screws, c c, rack and pinion of the posts, F F, with the platform, E, as and for the purpose described.

75,934.—CASK LABEL.—Edward A. Locke, Boston, Mass.

I claim the metal ring, with its flange and groove, for receiving an indentifying disk or plate to be applied to a cask, substantially as set forth.

Also, forming the disk, K, with the slits, c, substantially as and for the purpose set forth.

75,935.—PRINTERS' GALLEY.—H. E. Long, Plymouth, Ind., assignor to W. A. Long and George B. Lindsey.

I claim the slotted jaw, B, used in combination with the galley, which has one edge grooved, and with the pins, C C, substantially as and for the purpose herein set forth.

75,936.—COMBINED BROADCAST SEEDER, CULTIVATOR, AND ROLLER.—James P. Long, Osage, Iowa.

I claim, 1st, The combination of the ears, b6, angular flanges, b, and annular flanges, b1, for securing the staves of the rollers, as described.

2d, The combination of the open bearing, Q, with the detachable caps, P, to facilitate the removal of the rollers, B B', substantially as explained.

3d, The scrapers, S, constructed with sloping backs, s, and down-turned edges, s', and fastened under tapering blocks, U, attached to the under side of the rear of the frame, substantially as and for the purposes set forth.

4th, Constructing the conducting tubes, l, with flanges, l, for attaching them beneath the frame, and permitting their ready removal, as explained.

5th, The T-headed scatterers, L' l', when made separately from the tubes, L, and attached in connection therewith but capable of independent removal, substantially as described.

75,937.—OIL CUP.—Thomas Carr Longton, Trenton, N. J.

I claim the oil cup with an adjustable nozzle, having a spiral spring beneath it, all substantially as shown and described.

75,938.—MACHINE FOR WINDING BUTTONHOLE TWIST, ETC.—John Lovatt, Tarrytown, N. Y.

I claim, 1st, The adjustable flier and holder, constructed and arranged to operate substantially as described.

2d, The parter, L3, or its equivalent, combined and arranged with the flier, substantially as and for the purpose specified.

75,939.—APPARATUS FOR FILLING RAILROAD TANKS WITH WATER.—Samuel Love, Indianapolis, Ind.

I claim the device herein described, when the same is constructed in its several parts and operated in the way and for the purpose substantially as set forth.

75,940.—TUMBLER BRUSH.—Henry Lumbard (assignor to himself, George E. Gerts and John Schmidt), Chicago, Ill.

I claim the perforated block, A, provided with longitudinal bore, B, and tongued cap, C, said block secured to the handle, E, by means of the tongue, F, substantially as herein set forth and specified, when said block and said handle are made in separate pieces.

75,941.—CULTIVATOR AND GANG PLOW.—Isaac B. Mahon, Dunkirk, Ohio.

I claim, 1st, Constructing the frame, A, of a single bar, bent so as to form three sides of a quadrangle, and braced by the bars, F, applied to the frame and axle, substantially in the manner as and for the purpose set forth.

2d, The construction of the plow beams, K K', arranged with and applied to the main frame, A, to operate in the manner as and for the purpose herein set forth.

3d, The bar, W, applied to the beams, K K', substantially as and for the purpose specified.

4th, The oblique draft or brace rods, Y Y', applied to the carriage and to the plow beams, substantially in the manner as and for the purpose set forth.

5th, The beam, O, attached to the draft pole, and connected with the plow beams, in the manner substantially as and for the purpose herein set forth.

75,942.—BOILER.—John Marshall, Hartland, Mich.

I claim, 1st, The divided circulation tube, K (whether the parts, m and m', are of equal length or not), as a connection between a water or liquid heater and a water or liquid-containing vessel, B, substantially as described for the purposes set forth.

2d, In combination with the divided tube, K, the heater, A, constructed and arranged substantially as described for the purpose specified.

75,943.—APPARATUS FOR THE MANUFACTURE OF LAMPBLACK.—Mahlon Matlock, Bridesburg (Philadelphia), Pa.

I claim, 1st, Suspending the slates or sheets, which form the roof of a lamp black apparatus, from the wooden beams, C C, of the same, substantially as and for the purpose herein shown and described.

2d, Making the crown of the furnace low above the pan, H, and gradually or suddenly raising it at some distance from the pan, as set forth.

3d, Providing the bed, G, which supports the pan, H, with a gas channel, f, substantially as and for the purpose herein shown and described.

4th, The inclined plate, J, arranged across the opening to the dead-air chamber, E, of a lamp black apparatus, substantially as and for the purpose herein shown and described.

5th, The perforated damper, I, when provided with a plate, l, above the perforation, as specified.

6th, The combination, with the dead-air chamber, E, having the damper, I, of the horizontal flue, J, having the alternate up-and-down shelves, m, as set forth.

7th, The arrangement of the fan, L, or its equivalent, by which the gas is forced into a porous vessel or bag in which the lamp black is detained, as set forth.

75,944.—CULINARY STEAMER.—William S. McNeil (assignor to Thomas H. White and Warren Johnson), Springfield, Mass.

I claim, 1st, A culinary steamer, consisting of the case, A, having the pan, K, at the bottom, and valve at the top, with pipe, I, the vessels containing the food being arranged one above the other so that they can be removed through the door, substantially as described.

2d, The cloth packing, N, arranged upon the roller, O, substantially as and for the purpose shown.

75,945.—HAND STAMP.—Charles Merriam and Curtis O. Luce (assignors to themselves and Julius E. Higgins), Brandon, Vt.

We claim, 1st, The double type wheel, A A', constructed and operating in combination with the cam, m, types, t t t, pinion, p, and spring catch, s, substantially as set forth.

2d, The cam, m, in combination with the return cam, e, when used for the purpose described.

3d, The arrangement and combination of the type wheels, A A', type wheel, M, cap, C, and case, E, constructed and arranged substantially as and for the purpose set forth.

75,946.—PULLEY FOR HOISTING APPARATUS.—D. L. Miller, Madison, N. J. Antedated March 20, 1868.

I claim the pulley block, provided with the pulleys, a a f, and having a loop, d, pivoted to it, containing a pulley, e, all being arranged and operating as described for the purpose specified.

75,947.—POST HOLE BORER.—James K. Miller, N. Y. city.

I claim, 1st, The weighted shaft, H, provided with rack teeth, f, one side, and the borer, K, serrated at its lower end, in connection with the wheel, J, placed loosely on the shaft, and the driving wheels, G G, on the shafts, E E, one or more of the latter being used.

2d, The pinion, M, on the adjustable shaft, L, in combination with the rack shaft, f, on shaft, H, all arranged substantially as and for the purpose set forth.

75,948.—CARRIAGE HUB.—John W. Minor and David P. Ward, New Bedford, Mass.

We claim the collar, A', provided with a series of pins upon its face, entering through the elastic disk, e, and with the tenons formed in the spokes, when said collar is adapted to slide upon the spindle, A, as herein described for the purpose specified.

75,949.—SAD IRON HANDLE.—T. S Minniss, Meadville, Pa.

I claim the handle, in two parts, hinged as described, constructed and operated as and for the purpose set forth.

75,950.—APPARATUS FOR REGULATING THE POSITION AND MOVEMENTS OF THE ARMS OF VIOLIN PLAYERS.—Edward Mollenhaur (assignor to Theodore Ritter), New York city.

I claim an apparatus for regulating the position and movement of the arms of violin players, constructed and operating substantially as herein described.

75,951.—APPLE PARER.—James F. Monroe and Edwin P. Monroe, Fitchburg, Mass.

We claim, in combination with the rotary wheel, f, and with the cutter arm actuated to effect the forward movement of the paring knife (substantially as set forth), the incline or cam, m, and finger, k, arranged to operate substantially as described.

75,952.—VALVE FOR WATER PIPE.—G. R. Moore, Lyons, Iowa.

I claim the solid head, A, valve stem, B, valve, F, packing, G, removable guide, E, spring, H, and pipe connection, C, all constructed and arranged as herein shown and described.

75,953.—ICE CARRIAGE.—H. C. Moore (assignor to himself and P. H. Derby), Springfield, Mass.

I claim, 1st, The arrangement of the cogged wheel, B, and the gear wheel, O, operated by lever, D, in combination with the hand wheel, F, with pinion, G, and the rack, H, upon the pivoted axle, O, substantially as shown and for the purpose set forth.

2d, The brake, consisting of the vertical rod, M, and spring, L, constructed and arranged as described.

75,954.—BARREL TRUCK.—A. F. Morey, Greenbush, Ill.

I claim, 1st, The slides, C, in combination with the truck frame, containing holes, P P P, constructed substantially as described and arranged and for the purpose set forth.

2d, The hooks, V V and W W, constructed as described, and in combination with the slides, C C, and truck frame, A A, constructed substantially as described and for the purpose set forth.

75,955.—POCKET KNIFE.—John Moseley, New Haven, Conn.

I claim the spring, i, inserted in a knife handle having its back cast with one or both of its sides, when said spring is provided at its back with a recess adapted to fit without rivets over a projection cast in the back of the handle, as herein described for the purposes specified.

75,956.—HORSE HAY FORK.—P. A. Mowers, Cleversburg, Pa.

I claim the pair of grasping prongs, B C, operated in unison by means of cogged segments, b c, in combination with a lever to open or close them, substantially as and for the purposes explained.

75,957.—MODE OF PRINTING AND EMBOSSING CLOTH.—Lewis Murr (assignor to Joseph Metz and Bernard Metz), Philadelphia, Pa.

I claim the printing and embossing of cloth or other fabric at one operation by the employment of an engraved plate, applied directly to such fabric, and a heated plate, applied to the engraved plate, substantially as and for the purpose set forth.

75,958.—STEAM ENGINE LUBRICATOR.—John Nation (assignor to himself and Absalom B. Hallock), Portland, Oregon.

I claim, 1st, The valve, Dx, having corrugations, b, the slotted seat, E, constructed and arranged to operate as herein described.

2d, The arrangement of the oil cup, A, with the cocks, B D, cylinder, C, steam pipe, G, cock, c, corrugated valve, Dx, upper seat, H, and slotted lower seat, E, as herein described.

75,959.—LAMP BURNER.—Hiram K. Needham (assignor to himself and Richard E. Hearn), Titusville, Pa.

I claim the described arrangement and combination of the wick tubes, c c, base plate, d, and diaphragm, e, the latter extending upward and connecting the edges of the wick tubes so as to form separate and distinct internal and external air passages, f and b, as shown, and the whole so constructed that it may be applied to an ordinary lamp collar, substantially as and for the purposes set forth.

75,960.—LAMP BURNER.—George Neilson, Boston, Mass.

I claim, 1st, The combination, in a burner such as described, of the air-supply cylinder, with a deflector hinged to the said cylinder, substantially as and for the purposes herein shown and described.

2d, The combination, with the chimney rest and wick tube, of an air-supply cylinder, detachable or removable from its seat, and a deflector hinged to the air-supply cylinder, substantially as and for the purposes herein shown and set forth.

3d, The combination, in a burner such as described, of a chimney rest, air-supply cylinder and deflector, when the said parts are capable of being removed from and adjusted to the burner bodily and together, substantially as and for the purposes shown and specified.

4th, The combination, with the base and wick of a lamp burner, of a chimney rest, air-supply cylinder, and deflector, when the same are detachable from the said base and wick tube, and from one another, substantially in the manner and for the purposes shown and described.

5th, The combination, with the air-supply cylinder, of chimney supporting springs, attached to and projecting from said cylinder, substantially as herein shown and described.

75,961.—DIE FOR STAMPING TINWARE.—Joseph Neuberger and Peter J. Illig, Buffalo, N. Y.

We claim, 1st, The primary or "coaxing" die, A, when constructed and used for the purpose and substantially as herein described.

2d, The secondary or finishing die, B, having a shoulder, b', for the purpose and substantially as herein set forth.

3d, The secondary or finishing die, B, having a shouldor, b', in combination with the primary or "coaxing" die, A, for the purposes and substantially as herein described.

75,962.—DEVICE FOR FASTENING SHOE STRINGS.—Simon B. Parker, Springfield, Mass.

I claim a movable binding and locking lever, C, for the purpose of fastening shoe-strings, and preventing the same from untying.

75,963.—CHURN DASHER.—Benjamin M. Parks, St. Louis, Mo.

I claim the handle, A, when combined with the two dashers, B B', and the valve, C, as described and shown.

75,964.—HANGING RUDDERS.—Henry H. Pember, N. Y. city.

I claim the collar, G, in connect on with the flange, i, on cap, h, of rudder post, Cx, and the rod, F, attached to the keel, all arranged substantially in the manner as and for the purpose set forth.

75,965.—SAUSAGE FILLER.—John G. Perry, Kingston, R. I.

I claim constructing a sausage filler with a screw and nut, the nut being divided into two parts, substantially as herein described and for the purposes set forth.

75,966.—SAUSAGE FILLER.—J. G. Perry, South Kingston, R. I.

I claim one or more of the followers, o o, in combination with the screw, C, all working within the case, substantially as described and for the purpose set forth.

75,967.—PERMUTATION LOCK.—Oliver E. Pillard (assignor to Frederick H. North), New Britain, Conn.

I claim the stud, 4, on the bolt, in combination with the dog, e, for raising and holding up said dog and its arm clear of tumblers when the bolt is projected.

75,968.—NAPKIN RING AND SALT CUP COMBINED.—George Pine (assignor to himself and E. S. Cook), Trenton, N. J.

I claim a salt cup and napkin ring or holder combined, substantially as herein shown and described.

75,969.—AUTOMATIC FEEDER AND CUT-OFF FOR CISTERNS.—Stephen H. Plumb, Davenport, Iowa.

I claim, 1st, The water buckets, G G', attached to the valves, b, substantially as and for the purpose specified.

2d, The tilting lids, f, of the buckets, formed substantially as described, and for the purpose set forth.

3d, The buoy or float, H, so connected with the lid, f, as to change the position of said lid, when the water reaches a certain hight, substantially as and for the purpose set forth.

75,970.—BELT CLASP.—T. W. Porter, Boston, Mass.

I claim, 1st, A belt clasp, consisting of a plurality of fingers, a, each with a separate bar, b, and an eye, with the rod, A, inserted therein, substantially as described and shown.

2d, As a new article of manufacture, the fingers, a, when constructed with the bar, b, and eye for rod, A, when constructed substantially in the manner as and for the purposes specified.

75,971.—SLEIGH.—T. W. Porter, Boston, Mass., assignor to himself and Charles L. Marston.

I claim, 1st, The shaft hanger, constructed with wrought iron stays and malleable iron center, substantially as described and shown in figs. 1 and 2.

2d, The tip socket, B, formed separate from the center, A, and to revolve thereon, substantially as and for the purposes specified.

3d, The hollow pivot, d, formed upon socket, B, substantially as and for the purposes specified.

4th, The incline disk, b, in combination with the center, A, and socket, B, substantially as and for the purposes specified.

5th, The tip, C, formed with a recess for the shaft, D, and to receive the wrought iron strap, e, at the lower bolt hole, substantially in manner as described and shown.

6th, The foot rail, constructed with brackets, combined with insertable foot bars, substantially in manner as and for the purposes specified.

7th, The coupling, C, when constructed with the recess for standard, B, the ears, f f, and the lip, g, substantially as described and shown.

8th, Combining with the wrought iron stay or brace, d, the socketed malleable iron strap or foot, C, substantially as described and shown in figs. 5 and 6.

9th, The dash rail, B, formed to extend below the dash board, A, substantially as described, and for the purposes specified.

75,972.—EXPRESS WAGON.—T. W. Porter, Boston, Mass., assignor to himself and Charles L. Marston.

I claim, 1st, The rocker and axle plates, a and h, formed of malleable and white iron, substantially in manner as described and shown.

2d, The removable disk, or die, d, in combination with the rocker plate and kingbolt, substantially as and for the purposes specified.

3d, The combination of packing, g, cap, f, and king bolt, e, substantially as described and shown.

4th, The lugs, j j, formed upon the axle and rocker plates, by which, in combination with wrought iron straps, k k, to secure the plates to the axle and rocker.

5th, The tube plate, n, substantially as and for the purposes specified.

6th, The pivots, l l, or their equivalents, formed upon the axle plate, for the purposes specified.

7th, The pin, m, or its equivalent, formed upon the axle plate, for the purposes specified.

8th, The coupling, o, substantially as described and shown.

9th, The combination of coupling, o, strap, P, bolt, t, and strap, s, substantially as and for the purposes specified.

10th, The metallic corrugated or cellular tail board, frame, F, substantially as described and shown.

11th, The strap eyes, b b b, formed upon the frame, F, substantially in manner as described and shown.

12th, The chain eyes, f, formed upon the frame, F, substantially in manner as and for the purposes specified.

13th, The skid rackets, e, formed upon the frame, F, substantially in manner as described and shown.

14th, The tail board adjusting device, consisting of chains, k', ratchet drums, l', pawls, o', and the hand wheel, m', or its equivalent, all arranged to operate in manner substantially as described and shown.

75,973.—CARRIAGE.—T. W. Porter, and H. K. Porter, Boston, Mass., assignors to themselves and Charles L. Marston.

We claim, 1st, A spring shackle, formed with the bed plate, A, and the three-sided link, B, united by the wrought iron rivet, s, substantially as described, and shown in figs. 1 and 2.

2d, The stud, c, or its equivalent, formed upon the bed plate, substantially as described and shown in fig. 2.

3d, The sides, d d, of link, B, formed to extend beyond the bar, e, and cover the spring eye, substantially as and for the purposes specified.

4th, The rim, a, formed upon bar end, B, for the reception of the hanging iron, substantially as described and shown in figs. 3 and 4.

5th, The socket, B, formed to receive the hanging iron, a, and the bar, A, figs. 5 and 6, substantially as and for the purposes specified.

6th, The hollow metallic hanging bar, A, substantially as described, and shown in figs. 7 and 8.

7th, The rims, a a, formed upon the metallic hanging bar, A, substantially as described and shown in figs. 7 and 8.

8th, Combining the malleable iron yoke, A, with the wrought iron stay, d, substantially as described and shown in fig. 9.

9th, The hollow metallic head block, A, substantially as described and shown in figs. 10 and 11.

10th, The perch couplings, a, formed upon the head block, A, substantially as described and shown in figs. 10 and 11.

11th, Forming the arms, a a, of the pole crab hollow, substantially as described and shown in fig. 12.

12th, Forming the pole strap studs, b b, hollow, substantially as described and shown in figs. 12 and 13.

75,974.—WINDOW SHADE.—T. E. Purdy, Brooklyn, N. Y.

I claim the window shade, or window shade material, made as described viz., with the woven fabric in its original color, exposed to form the figure in imitation of lace or embroidery, the groundwork being printed.

75,975.—SHOE KNIFE.—N. M. Ray, Ellsworth, Me.

I claim, in combination with a shoe knife, the detachable cap, A, when attached to the knife by a hook, at one end of a slot, and fastened by friction at the other end of the slot, substantially as shown and described, for the purposes specified.

75,976.—BELT CLASP.—John Reading, Samuel Alfred Reading, George Edward Reading, and Frederick Francis Reading, Birmingham, England.

We claim, 1st, The dress fastening or clasp, consisting of a bolt or bolts, B', operating within a case, B, or its equivalent, and provided with a catch or catches, i, and a spring or springs, b, each or all in combination with a catch or catches, a, or the equivalent thereof, and all constructed and operating substantially as and for the purpose shown and described.

2d, The slot, r, in combination with the case, B, and spring, b, of a belt clasp or other fastening for dress appendages, for the purpose of holding and providing a point of resistance to the said spring, b, and also serving as a stop to the pin, t, of the bolt, all substantially as shown and described, and for the purpose specified.

3d, The slotted bolt, B', of a dress fastening, having a tongue, a, or its equivalent, for the better holding of the spring, b, all substantially as shown and described, and for the purpose specified.

4th, Forming the bolt, B', of a dress clasp or fastening with projections, i, and a tongue, a, or their equivalents, all substantially as shown and described, and for the purpose specified.

5th, The case, B, made substantially as shown and described, for the purpose of serving as a guide for the longitudinal movement of the bolt, B', and for holding the same against the lateral traction of the belt when the same is on the wearer, and also for assisting in catching and holding the catches, c c, all as set forth.

6th, The spring tongues, l, in combination with the bolts, B', for the purpose of actuating the latter when the formation and employment of the case B, render the thumb bit m, more or less inadmissable, all as set forth.

75,977.—RAILWAY RAIL JOINT.—Samuel J. Reeves, Philadelphia, Pa.

I claim a rail joint, consisting of the ribbed bar, B, and clamping bars, D, and D', adapted to each other and to the rails, substantially as set forth, for the purpose specified.

75,978.—LAMP BURNER.—E. B. Requa, South Bergen, N. J.

I claim, 1st, The perforated cap-shaped plate, B, provided with an under concave surface, d, through which the wick tube, c, passes loosely, substantially as and for the purpose specified.

2d, The lower rim, A, with the wick tube, c, attached, in connection with the perforated cap-shaped plate, B, and cone or deflector, C, all arranged substantially in the manner as and for the purpose specified.

75,979.—RAILWAY SNOW PLOW.—Elisha Robbins, Worcester, Mass.

I claim the combination of the tunneller, A, and the auger or borer, C, arranged as set forth.

Also, the combination of the tunneller, A, the auger or borer, C, and one or more deflectors, e e, arranged so as to discharge the snow laterally from the auger, as specified.

Also, the combination and arrangement of the auxiliary deflector or deflectors, f f, of the top of the tunneller with the said tunneller, the rotary auger, and the other deflector or deflectors, e e, arranged as specified.

Also, the combination and arrangement of the anti-friction tube, D, with the auger, C, the tunneller, and one or more deflectors, arranged in the rear of the said tube.

Also, the combination of one or more supporting wheels, g, with the auger tube, D, the tunneller, and one or more deflectors, e, as specified, such rollers being for supporting the tube while in revolution.

75,980.—PROCESS OF CLEANING WOOL, ETC.—Louis S. Robbins, New York city.

I claim the process herein described for removing the alkaline, oily, and gummy substances from wool, by the use of the light vapors obtained from petroleum, naphtha, and other similar substances or compounds, substantially as described.

Also, The process of saturating wool, preparatory to its being manufactured, by the application of oleaginous vapors, substantially as herein described.

75,981.—CAR STARTER.—Leonhard Rodenhausen, Philadelphia, Pa.

I claim the catch, E, attached directly to the tongue or draw bar, D, and employed in combination with a ratchet wheel secured to the center of the axle, all arranged and constructed to operate as herein described and represented.

75,982.—CAR SEAT.—Charles Rowland, Washington, D. C.

I claim the head rest, consisting of the frame, C, provided with the sheet of rubber, or other flexible material, and arranged to slide within the back of the seat, and be protruded from either side thereof, substantially as shown and described.

75,983.—INVALID BEDSTEAD.—W. W. Rowles and A. J. Russell, Baltimore, Md.

We claim, 1st, The supplementary bedstead, C C1 C2, when used in combination with the bedstead, A A, substantially as and for the purposes specified.

2d, The laterally sliding frame, composed of the end pieces, G G, and vertically adjustable side pieces, f, supported upon the sliding standards, E E, and the posts, D D, running upon trucks, c c, substantially as and for the purpose specified.

3d, In combination with a laterally-sliding frame, as above described, a roller, i, for the purpose of holding and adjusting one side of the supporting sheet, J, substantially as described.

4th, The sheet, J, having one serrated edge looped, as shown at j j, n n, substantially as and for the purposes set forth.

5th, The forked lever, O, having the hook, o, substantially as and for the purposes shown.

75,984.—WOOD-PLANING MACHINE.—James J. Russ, Worcester, Mass.

I claim, 1st, The adjustable frame, G, bearing the feed rollers, and provided with the bars, M N, in combination with the spring, O, substantially as described for the purpose specified.

2, The frame, V2, for the spindle, U3, constructed as described, having the box-bearing, W3, and the socket-bearing, a2, and arranged to operate in connection with the box, B3, substantially as described for the purpose specified.

3d, The bar carrying the presser shoe to the machine, when arranged in a frame applied to the machine, for adjustment thereon, and for its own adjustment through a spring, whether both be combined in one or used separately, substantially as and for the purposes described.

4th, The clamp or holder for the presser-block, provided with a spring arranged for operating, substantially as and for the purpose described.

5th, The bridge-pieces or slides, D3, for the openings, C3, in bed-plates to the machine, in combination with the sliding box, B3, substantially as and for the purpose described.

75,985.—DEVICE FOR SOLDERING TIN CANS.—Wm. Serviss, Sidney, Ohio.

I claim, 1st, The holder, composed of the shell, A, furnished with the annular lip, a, substantially as and for the purpose herein set forth.

2d, The combination, with the holder, constructed as described, of the knob, C, substantially as and for the purpose specified.

75,986.—CARBONIZING AND HARDENING IRON AND STEEL.—Francis E. Sessions, Worcester, Mass., assignor to himself and Samuel H. Knox.

I claim the process above described for carbonizing and hardening iron and steel.

75,987.—MOLD-BOARD FOR PLOWS.—Josiah Seymour, Coventry, N. Y.

I claim the forming of a mold-board for plows, either single or reversible, in such a manner that the lines bounding the vertical sections of said mold-boards shall be straight, substantially as herein described and set forth.

75,988.—DOUBLE SHOVEL PLOW.—M. R. Shalters and Samuel Ray, Alliance, Ohio.

We claim, 1st, The T-shaped box, D, for forming the main frame of a double-shovel plow, substantially as herein set forth.

2d, In combination with the box, D, the braces, C C, and handles, A A, substantially as and for the purpose specified.

3d, The arrangement of the braces, F F, C C, and the rod, H, and tube, G, with the handles, and beam for contracting and expanding the frame, substantially as herein set forth.

75,989.—SAND SCOOP.—John Sheets, Columbia, Pa.

I claim the arrangement of the socket, scoop, and handle, H, with its shoulder, D, ring, E, braces, F F, in combination with the rope, or its equivalent, and links, L, when made substantially in the manner and for the purpose specified.

75,990.—SICKEL SECTIONS, AND METHOD OF SERRATING THEM.—Samuel D. Sheldon, Fitchburg, Mass., assignor to "The Whitman and Miles Manufacturing Company."

I claim, 1st, The beveled faced anvil or block, for supporting the blank sections while the serrations or cuts are being made, substantially as and for the purposes set forth.

2d, The mode of forming the serrated cutting-edge, e, of the section, as and for the purposes set forth.

3d, The serrated-edged sickel section, as an improved article of manufacture, made as shown and described, and for the purposes set forth.

75,991.—ATOMIZING APPARATUS FOR SURGICAL USE.—A. M. Shurtleff, Boston, Mass.

I claim the combination of the elastic bulb, f, and its flexible connection, with the atomizing tubes, the vessel, a, the atomizing tubes, b c, and the shield, h, substantially as described.

Also, constructing the shield, h, with a mouth tube, k, substantially as set forth.

Also, arranging the mouth of the shield to drip directly into the vessel, a, substantially as shown and described.

Also, making the stopper, d, with an orifice, l, for receiving the edge of the shield, and conducting the excess of fluid back into the vessel, substantially as described.

Also, supporting the shield by means of a ring or band encompassing the mouth tube, substantially as set forth.

Also, connecting the shield directly to and supporting it by the liquid-containing vessel, substantially as described.

Also, applying the shield so as to swing up from and down into connection with the orifice, l, substantially as set forth.

Also, applying the standard, m, so as to be adjustable in hight and in distance from the vessel, a, substantially as and for the purpose set forth.

Also, a stopper of rubber or rubber compound, when made with a center

hole for insertion of the atomizing tube, and an orifice for return of the excess of fluid, substantially as set forth.

75,992.—COMPOSITION FOR EMBALMING.—James C. Sickel, Philadelphia, Pa.

I claim the combination of glycerin, alcohol, and sulphurous acid, flavored with acetic acid and essential oils or flavors, for the preservation of dead bodies, in the manner described.

75,993.—FRUIT JAR.—Charles S. Siddons, Rochester, N. Y.

I claim the fruit-jar cover, composed of a single sheet-metal plate, having a vertical rim, B, and projecting flange, P, and used in combination with the ordinary packing-ring, A, and jar having an internal shoulder or projection, as and for the purposes set forth

75,994.—FENCE.—A. D. Smith and E. Stow, Townsend Station, Ohio.

We claim a fence, constructed with an indented wire or wires, in combination with the hooks, a, and pickets, C, as and for the purpose specified.

75,995.—FLAT IRON HEATER.—S. W. Smith, Addison, Vt.

I claim, 1st, The construction and arrangement of the plate, A, with the flange or side wall, C, and the plate, F, combined and operating substantially as shown and described for the purpose set forth.

2d, The chamber, A', when formed by two open plates, substantially at and for the purpose described.

75,996.—DOOR BUTTON.—Wm. E. Sparks (assignor to Sargent & Company), New Haven, Conn.

I claim the lever, B, provided with a spring point, d, operated by the plate, A, the said plate, A, provided with one or more indentations to receive the pivot, a, substantially as and for the purpose specified.

75,997.—HORSE HAY FORK.—J. W. Summers, Sandy Hill, N. Y.

I claim the shanks, A and B, the single tine, G, bands, D D, cam-loop, H, catch-loop, J, notches, l and m, and cord, I, all constructed and operating substantially as shown and subscribed, and for the purposes set forth.

75,998.—STEAM PUMP ENGINE.—James Sutherland and Francis Moakley, Easthampton, Mass. Antedated Feb. 18, 1868.

We claim, 1st, The secondary valves, a and a', with their respective ports, e and e' and f and f', whereby each performs the functions of exhausting steam from one end of the main valve, and supplying steam at the other, by their alternate movement respectively, substantially as shown.

2d, The arrangement of ports, e and e' and f and f', with the secondary valves a and a', substantially as shown and described.

3d, The arrangement of the pieces, H and H, in the main valve, and channels g and g, in communication with them, substantially as shown.

4th, The arrangement of the piece, h, in the secondary valves, as shown.

75,999.—CARRIAGE SPRING.—T. W. Suthff, Town Line, Pa.

I claim, 1st, Spring bars, F F, provided with metal plates, a a, perches, D D, arranged in combination with clips, E E, and bolts, c c, as and for the purpose set forth.

2d, The adjustable cross bars, G G, in combination with spring bars, F F.

3d, The employment of the screw rods, K K, in combination with adjustable cross bars, G G, and spring bars, F F, substantially as and for the purpose specified.

76,000.—HARVESTER RAKE.—Jerome B. Sweetland, Pontiac, Mich.

I claim, 1st, The rod, Q, with its weight and notch, used with the plate, n, for holding up the rake, as is herein fully set forth.

2d, The pulleys, M and O, and belt, N, used with the rake, P, for giving it motion, the pulley, O, being provided with a spring, which draws the rake back after it has been carried forward by the pulley, M, substantially as set forth.

3d, The arrangement of pulley, M, and sleeve, J', upon shaft, I, with the lever, J, spring, Y, and rod, K, as and for the purpose herein specified.

4th, The bars, e e, in combination with leve, J, and trip bar, V', which is operated upon by the plate, h, on belt, N, as and for the purpose specified.

5th, The bar, R, in combination with the rod, Q, upon the rake, used as and for the purpose described.

6th, The rack or guard, U, upon the reel standard, when used substantially as and for the purpose set forth.

76,001.—HARVESTER.—D. H. Thayer, Ludlowville, N. Y.

I claim the plates, D, on the wheels, B, provided with curved eccentric edges h, and springs, E, in combination with the chambered disks, C, secured permanently on the axle, A, and the rollers, F, placed in the chambers, between the curved edges, b, of the plates and the rims or edges, d, of the chambers, a, substantially as and for the purpose set forth.

76,002.—STEAM ENGINE PISTON VALVE.—W. R. Thomas and Thomas Evans, Catasauqua, Pa.

We claim the valves, G G', operated by the arms, D D', and by the exhaust steam, in combination with a steam engine with steam and exhaust ports, a a and c c, arranged as described, the whole combined and operating substantially as shown and described.

76,003.—WATER WHEEL.—I. M. Thompson, Edinburgh, Ind.

I claim the combination of the two sets of buckets, c d, with the two sets of gates, g and F, all constructed and arranged to operate in the manner substantially as and for the purpose set forth.

76,004.—WASHING MACHINE.—J. P. Thompson, Kirkville, Iowa.

I claim the combination of the corrugated rollers, C C', slotted standards, blocks, E, elastic bands, F, and boxes, G, arranged to operate substantially as set forth.

76,005.—BASE-BURNING STOVE.—Robert B. Thompson, New York city.

I claim, 1st, Supporting the reservoir, E, upon brackets, Q Q, in combination with the air pipes, H, substantially as set forth

2d, The combination of the annular air-chamber, F, around the lower part of the reservoir, E, with the vertical bars or fingers, l, substantially as shown.

3d, The combination of the annular air chamber, F, formed around the lower part of reservoir, E, with air pipes, H H, when the latter extend downward through the base flues, J J, substantially as shown.

76,006.—CAR COUPLING.—W. E. Twining, Morrison, Ill.

I claim the draw head, B, constructed with the hook, B1, and recesses, B2 and B3, arranged substantially as described.

76,007.—DASHBOARD AND REIN HOLDER.—P. Verplanck, Jr., Binghamton, N. Y.

I claim, 1st, The combination of the rein holder, z, with the dashboard irons, A B C, as shown.

2d, So forming the side and top irons of the dashboards of carriages as to receive, in an indentation in those irons, the rein holder, the top of which shall be but little above the line of the iron, the ends of the indentations being so shaped as to be a stop or guard to the rein, preventing it from being snatched or switched out of the holder, as hereinabove set forth.

76,008.—FRUIT JAR AND PRESERVING VESSEL.—A. Warner, Williamsburgh, N. Y. Antedated March 18, 1868.

I claim, 1st, A vessel with its lid, cover, or stopple, constructed and combined substantially as herein described, whereby a vent is opened and closed by simply turning the lid, cover, or stopple, or the vessel, the one relatively to the other, as herein set forth.

2d, Likewise, in combination with the same, a perforated elastic packing or gasket, interposed between the lid or cover and perforated portion of the jar, substantially as specified.

76,009.—MEANS FOR CLOSING PRESERVING VESSELS.—Alexander Warner, Williamsburgh, N. Y.

I claim, 1st, A cover composed of two principal perforated pieces, combined to operate substantially as herein specified.

2d, The perforated gasket, in combination with the perforated valve and perforated seat, substantially as herein specified.

3d, The wrench composed of two connected prongs, one or both of which are made tubular, to form an air passage communicating with the corresponding aperture or apertures in the cover of the vessel, substantially as and for the purpose specified.

76,010.—HEATING FURNACE.—Joseph Watts, Birmingham, Great Britain.

I claim, 1st, Arranging the grate bars or fire bars in such a manner as to deflect the draft, or a portion thereof, in a downward direction, or in the direction in which the fuel is introduced, substantially as and for the purpose set forth.

2d, The grate bars, f b, bent in A-shape, substantially as and for the purposes described.

3d, In combination with the grate bars, f, a conical hollow bed, d, and the flue, i, below the grate and bed, forming a downward and outward passage for the heated air and products of combustion, substantially as and for the purposes described.

4th, A grate formed of consecutive rings of A-shaped grate bars, arranged above each other in any suitable manner, substantially as and for the purpose set forth.

76,011.—WEEDING TOOL.—Nelson Webster, Plainfield, N. J.

I claim, 1st, The shuffling hoe and rake, constructed as described, consisting of the cutter, C, provided with upturned cutting ends, c, and secured to the bow, B, carrying the teeth, D, as herein shown and described, for the purpose specified.

2d, Making the teeth of the rake, when they are fitted into a bow, B, longer toward the rear, substantially as and for the purpose herein shown and described.

76,012.—ROOFING COMPOUND.—E. B. Wells, New York city.

I claim the within-described compound, when mixed and used substantially as and for the purpose specified.

76,013.—REED ORGAN.—Franklin A. Wells (assignor to Jacob Esty & Co.), Brattleboro, Vt.

I claim the combination and arrangement of the friction spring or brake, with the adjustable knee piece and lever, E, of the mechanism for effecting the elevation of the swell.

76,014.—SLATE FRAME.—W. C. Wendell, Albany, N. Y.

I claim the elastic cushions, b b, formed upon the ends of a contracted neck, a, and adapted for the protection of slates, substantially as described.

76,015.—DRESSING HIDES AND FURS.—Chas. I. Weston, Cummington, Mass.

I claim, 1st, The tanning composite, the combination of the ingredients herein named, when applied substantially in the manner and for the purpose set forth.

2d, The composition herein named for coloring furs and leather, substantially as shown and described.

76,016.—BUTTON.—Alonzo S. Wheeler (assignor to himself and J. E. Wheeler), Westport, Conn.

I claim the arrangement of the button attachment or rivet within the button, so that, while the button is secured by the attachment to the garment, the button may be drawn from the garment, and returned, substantially in the manner herein set forth.

76,017.—FAUCET FOR SODA WATER FOUNTAINS.—Albert M. White, Thompsonville, and Edward G. Burnham, Bridgeport, Conn.

We claim, 1st, The tubular stem, e, of the valve, B, arranged within the passage, c, of the bib, A*, substantially as and for the purpose specified.

2d, The supplemental valve, C*, arranged in combination with the valve, B, on the tubular stem, e, and so constructed that, after opening the said tubular stem, the continued movement of such supplemental valve shall lift the valve, B, to open the passage, c, of the bib, substantially as and for the purpose specified.

76,018.—HOT AIR FURNACE.—James Whitehill, Frederick, Md.

I claim, 1st, When used in connection with my furnace, as above described, the attachment in fig. 4, substantially as and for the purpose set forth.

2d, The combination of a fan, S, with a pipe, N, leading from the lower part of the room to be warmed to the lower part of the hot air chamber, O, by which a circuit of air can be established that will exhaust the cold air from the room, pass it over the heater, and return it warm to the room again, substantially as and for the purpose set forth.

76,019.—PORTABLE BUILDING.—Daniel S. Whitenhall, St. Louis, Mo.

I claim, 1st, The combination of the rods, c c' c'', angle irons, h h1 h2, etc., straps, p, hing s, e e1 e2, etc., with the sections and battens of a portable house, as and for the purpose specified.

2d, The construction of a portable or permanent building, substantially as shown and specified.

76,020.—AWL HANDLE.—D. R. Wight, Sturbridge, Mass.

I claim the conical nut, b, in combination with the flat-end screw, a, and split cone, c, when constructed and arranged so that the split cone shall be made to close upon the awl by the action of the conical nut alone when screwed up as herein shown and described.

76,021.—PAVEMENT.—C. Williams, New York city.

I claim the arrangement of metal bars, b, inserted into suitable grooves in the upper surfaces of the wooden pavement blocks, A, so as to produce a wearing surface, substantially as and for the purpose set forth.

76,022.—WOOD TURNING LATHE.—Edwin Williams, Rowlesburg, W. Va.

I claim the sliding collar, B, when provided with the arms, c, passing through slots, in the flange, a', of the hollow spindle, A, and having the diagonal slots for the reception of the pin, d', upon opposite ends of the cutters, D, which are also pivoted at opposite ends to the flange of the hollow spindle, all constructed and operating as described, for the purpose specified.

76,023.—FURNACE GRATE BARS.—Jesse Williams, John Forgie, and James Edwards, New York city.

We claim the combination in a furnace grate bar, of two thin arched webs a a, transverse partitions, b, and concave perforated top bar, c, all constructed in the manner and for the purpose herein described and represented.

76,024.—MACHINE FOR OPENING HAIR ROPE.—Philip Wisdom, New York city.

I claim, 1st, The revolving tube, E, operated by the disk, D, and arranged eccentrically within the tube, a, having the handle, b, said tube, E, having eccentrically upon its face the arms, c, bearing the roller, d', whose revolutions are caused by the passage of the rope, as and for the purpose herein shown and described.

2d, The smooth beater, H, in combination with the plate, I, rollers, F G, rollers, d, tubes, a E, and clamp, J, as herein described for the purpose specified.

3d, The loose conical roller, d, when arranged in relation to and combined with tube, E, in the manner and for the purpose described.

4th, The swivel clamp J, when made substantially as herein shown and described, and when provided with the sliding plate or sleeve, h, in combination with the tube, E, substantially as herein specified.

5th, The plate, I, having curved upper and lower edges, arranged and combined with the rollers F G, and with the beaters, H, as herein described, for the purpose specified.

6th, The arrangement and combination with each other of the rail L, block K, swivel clamp, J, tube, E, roller, d, rollers, F G, plate, I, and beaters, H, all made and operating substantially as herein shown and described.

76,025.—COMPOSITION FOR SHARPENING EDGE TOOLS.—Geo. L. Witsil (assignor to Thomas E. Hauberger), Philadelphia, Pa.

I claim a composition for sharpening tools compounded and prepared substantially as set forth.

76,026.—LETTER BOX.—James E. Woodruff, Buffalo, N. Y.

I claim the box, A, with stationary plate, G, and hinged plate, F, both of which extend obliquely below the lid, A, and form a V-shaped throat, which is opened or closed by the cam, B, attached to the cover, A, lever, D, and rod, E, substantially in the manner herein set forth.

76,027.—CUT-OFF VALVE GEAR.—William Wright, New York city.

I claim the combination with the separate induction valves to opposite ends of the engine cylinder, of the fixed cam, E, and variable cam, G, arranged for action in either direction of the engine's travel, substantially as described, opening and cut-off toes, D H and D' H', geared by levers, J J', or their equivalents, for joint but independent action in opposite sides of the axes of the cams, and whereby not only are the valves opened and closed independently of each other, and each made capable of different cut-off strokes by the action of said cams on the toes, but whereby both the opening and closing movement is given to either valve, respectively, from the same side of the axes of the cams as that on which the valve lies, essentially as herein set forth.

76,028.—KITE.—Adolph Yorns and Edmund J. Smith, New York city.

We claim the kite frame, A, when constructed of the downwardly converging rods, a, cross bars, b e f, and ring or segment, c, all combined and arranged to produce a kite of substantially the figure herein shown and described.

76,029.—HORSE HAY FORK.—William Zimmerman, Colfax, Iowa.

I claim, 1st, In a hay or manure elevator, the combination of the hook, C, latch, D, yoke, E, chain, B, and connecting bar, G, arranged, substantially as and for the purpose set forth.

2d, The combination with a horse hay fork of the transverse bar, H', applied and operating in the manner and for the purpose set forth.

3d, The combination with a horse hay fork of the scoop or blode, K, applied and operating substantially as described.

4th, The detachable handle, I, and rod or brace, J, in combination with a horse hay fork, substantially as and for the purpose set forth.

76,030.—TAPPING PIECE FOR BARRELS.—August Zinsser, New York city.

I claim the cast iron tapping piece, A, with a screw thread, B, and ears, D D, substantially as shown.

76,031.—COMPOUND OF ANILINE COLORS.—Emil Zinssmann (assignor to himself and Charles Rumpff), New York city.

I claim a compound which is soluble in water, and made from such analine colors which in themselves are not soluble in water, by treating said colors with glue or equivalent substances, either alone or mixed together, and with a liquid, such as acetic acid, or glycerin, or their equivalents, either alone or mixed together, as herein set forth.

76,032.—BROILER AND TOASTER.—Wm. F. Collier and Jonah H. Bigelow, Worcester, Mass.

We claim the wire frame, A A, when provided with a series of ears or projections, D D, formed by pressing out part of the metal without bending the wire, in combination with the bars, B B, and handles, substantially as and for the purpose herein shown and described.

REISSUES.

2,901.—LAMP BURNER.—W. H. Love, R. H. Childs, and H. W. Childs (assignees by mesne assignments of John C. Love), Philadelphia, Pa. Patented Dec. 17, 1867.

We claim, 1st, A flat slotted plate, d, arranged above the dome, B, of a lamp burner, as and for the purpose described.

2d, The plate, d, with its flange, I, and opening, n, in combination with the the casing, A, of a lamp burner, when the edges of the said opening, w, are parallel to the upper edge of the wick tube, as set forth.

2,902.—FAGOT FOR RAILWAY RAILS.—Thomas E. Purchase, Reading, Pa. Patented Feb. 2, 1858.

I claim, 1st, The manufacture of railroad rails from a pile, the top bar of which is of a superior quality of iron, immovable laterally, and sufficiently heavy to give the rail when rolled a consolidated head, connecting with the lower layers in the stem of the rail, substantially as above set forth.

2d, An intermediate iron form piece for a fagot for a railroad rail, such form piece being constructed with an irregular welding surface, for fitting a corresponding welding surface in the superior metal cap or top piece, substantially as described.

DESIGN.

2,960.—BOTTLE.—Meigs Jackson, Clarksburg, W. Va.

NOTE.—FIFTY-SEVEN patents in the above list were obtained through the Home Office of the Scientific American Patent Agency.—EDS.

PENDING APPLICATIONS FOR REISSUES.

Application has been made to the Commissioner of Patents for the Reissue of the following Patents, with new claims as subjoined. Parties who desire to oppose the grant of any of these reissues should immediately address MUNN & Co., *37 Park Row, N. Y.*

[ISSUED FOR WEEK ENDING MONDAY, MARCH 16, 1868.]

61,373.—PISTON FOR STEAM ENGINE.—William D. Whitmore, Boston, Mass. Dated Jan. 22, 1867. Application for reissue received and filed August 28, 1867.

I claim my improved ring section, and wedge piston, as made, not only with its ring sections and their wedges, wholly within and supported by a case, C, separate from and to be attached to the cap, B, by screws, but as having the cap, B, applied to the piston rod, A, the whole being substantially as and for the purpose herein before set forth.

I also claim the combination of the grooved and perforated annulus, made and described, and either connected in one piece with or separate from the cap plate, with such cap plate, the plate, B, the series of ring sections, h, and the wedges, f and springs, g.

14,368.—METHOD OF BOTTLING FLUIDS UNDER GASEOUS PRESSURE.—Paul Schmitt (assignee of Jane Quantin, and H. A. Pintard), New York city. Dated March 4, 1856. Application for reissue received and filed March 4, 1868.

I claim, 1st, The method of drawing off aerated liquids, such as mineral or soda water, by the admission of syrup and soda water, through the same filling head or nozzle, and whereby said water or liquid is sweetened, while the bottle or vessel is being filled.

2d, A syrup, measuring chamber, in combination with the filling head of a bottling machine, the two being combined in one apparatus.

3d, In a syrup charging machine, an attachment to a filling head or nozzle causing the syrup to be expelled from the measuring chamber of said device by force applied in rear of it, other than that produced by mere gravity of the syrup, essentially as specified.

4th, The combination with the measuring chamber of a bottling machine, of a piston fitted to said chamber, and so operating as to regulate the quantity of syrup admitted and expelled.

5th, Providing the syrup measuring chamber for operation in connection with a suitable filling head or nozzle, with an air tube or vent, substantially as specified.

6th, The combination, in the one machine or apparatus, of a discharging nozzle, for drawing off the aerated water with a syrup-measuring chamber.

7th, The combination of a cock or valve for controlling the egress of syrup from the measuring chamber, with a conduit for passage of the aerated water.

8th, So connecting or gearing the several valves which control the admission and discharge of the syrup and aerated water, as to effect the mixing and expulsion of both in a continuous manner, essentially as herein set forth.

9th, An apparatus of compound character, constructed and operating substantially as hereinbefore described, that is, to introduce a certain portion of a liquid into the apparatus, and to force it out by the action of another liquid gaseous or fermented.

72,953.—DITCHING MACHINE.—David Whisler, Union Township, Ohio. Dated December 31, 1867. Application for reissue received and filed March 7, 1868.

1st, I claim the adjustable features of the mold board and knives for cutting a wide or narrow ditch, substantially as described.

2d, The peculiar construction of the shovel, as and for the purpose set forth.

3d, The construction of the colter, as and for the purpose specified.

4th, The hinged platform, T, for regulating the depth of the furrow or ditch, substantially as described.

5th, In combination with the above, I claim screw, h, and springs, t, substantially as set forth.

6th, I claim axle, B, wheels, C C, beam, A, platform, T, screw, h, springs, t, and vertical knife, P, all combined and arranged as and for the purpose set forth.

62,061.—DOOR AND GATE LATCH.—James A. Park, White House, N. J. Dated February 12, 1867. Application for reissue received and filed March 11, 1868.

1st, I claim the angular latch, C, secured upon a door, gate, or post, and operating substantially as and in the manner herein set forth.

2d, The arrangement of the angular latch, C, upon a suitable shaft, and provided with a weight, D, or its equivalent, substantially as and for the purposes specified.

3d, The angular latch, C, provided with a weight, D, and shaft, B, and secured to the door or gate by means of the plate, A, or in any other suitable manner, to operate substantially as specified.

4th, The combination of the latch, C, shaft, B, and weight, D, with or without a spring of suitable construction, all constructed to operate substantially as described.

36,268.—HORSE RAKE.—C. M. Titus, Ithaca, N. Y., assignees by mesne assignments of E. L. Bergstresser, Hublersburg, Pa. Dated August 26, 1862. Application for reissue received and filed March 13, 1868.

I claim a pressure bar provided with hanging loops or staples, by means of which the rake teeth are lifted to discharge their load.

The employment of suspending lifting loops or staples, in combination with the rake teeth, as described.

The pressure bar, provided with lifting loops or staples, in combination with a lever for operating the same as described.

43,202.—BRIDGE.—David Hammond, and W. R. Reeves, Canton, Ohio. Dated June 21, 1864. Reissue No. 2,701. Dated July 30, 1867. Application for reissue received and filed March 13, 1868.

1st, We claim the arch, A, constructed of the arch pieces, a a, covering piece, b, clamping pieces, c c, bolts, d d, with nuts, e e, the several parts being arranged and combined substantially in the manner and for the purpose herein specified.

2d, The peculiar arrangement and combination of the arch pieces, a a, covering piece, b, bolt, m, suspension rod, B, or diagonal brace, C, wish bolt, x, or w, and nuts, f or h, the several parts being constructed and arranged substantially in the manner and for the purpose herein specified.

3d, The combination of the arch, A, constructed as hereinbefore specified, the chord, D, suspension rods, B B, diagonal braces, C C, and shoes, E, substantially in the manner and for the purpose herein specified.

56,043.—BRIDGE.—David Hammond, Canton, Ohio. Dated July 3, 1866. Reissue No. 2,586. Dated April 30, 1867. Application for reissue received and filed March 13, 1868.—Division A.

1st, I claim the peculiar arrangement and combination of the arch pieces, C C, clamping pieces, q or p, clamping bolts, w or p, and covering piece, b, when said arch pieces, C, have the flanges, x x, rolled on to the web, c, and whether the flanges, y y, be or not be used, the several parts being constructed, arranged, and used in the manner and for the purpose herein specified.

2d, The clamping piece, q, constructed and used substantially as herein specified.

3d, The clamping piece, p, constructed and used substantially as is herein specified.

4th, The combination of the arch, a, constructed as is herein shown, the shoes, g g, chords, d d, suspension rods, f f, and braces, e e, the several parts being constructed and arranged in the manner and for the purpose herein specified.

56,043.—BRIDGE.—David Hammond, Canton, Ohio. Dated July 3, 1866. Reissue No. 2,586. Dated April 30, 1867. Application for reissue received and filed March 13, 1868.—Division B.

1st, I claim the combination of the arch pieces, C C, of solid T or double T iron, and the single or double bolted clamping pieces, P Q Q, and clamping bolts, W W, or P, the several parts being constructed and arranged in the manner and for the purpose herein specified.

2d, The combination of the arch pieces, C C, of solid T or double T iron, rivets, T T, and securing piece, O2, with bolt, O', and nut, O, the several parts being combined and arranged in the manner and for the purpose herein specified.

3d, The peculiar arrangement and combination of the arch pieces, c c, having the upper flanges, x x, rolled thereon, and with or without the lower flanges, y y, the covering piece, B, securing piece, O2, with bolt, O', and nut, single or double bolted sharpening piece, P; or Q Q', and clamping bolts, W W', or P', the several parts being arranged in the manner and for the purpose herein specified.

4th, The securing piece, O2, with bolt, O', and nut, O, constructed and used substantially as is herein specified.

5th, The use of curved T or double T beams, made with solid flanges, while being rolled in the construction of any iron or steel arch, which is united at the ends by chords, and forms a part of the bow string girder, substantially in the manner and for the purpose herein specified.

66,935.—SKATE FASTENER.—E. H. Barney, and John Berry, Springfield, Mass. Dated July 23, 1867. Application for reissue received and filed March 13, 1868.

I claim, 1st, as a new article of manufacture, a skate fastener or key, having the socket or wrench, B, and button, e, and made either with or without the point, f, all constructed substantially as herein described, and for the purposes specified.

2d, As a new article of manufacture, a skate fastener or key, having the socket or wrench, B, and point, f, and made either with or without the button, e, all constructed and operating substantially as described, and for the purposes herein specified.

☞ NOTE.—*The above claims for Reissue are now pending before the Patent Office, and will not be officially passed upon until the expiration of 30 days from the date of filing the application. All persons who desire to oppose the grant of any of these claims should make immediate application.* *MUNN & CO., Solicitors of Patents, 37 Park Row, N. Y.*

EXTENSION NOTICES.

Finley Latta, administrator of the estate of A. B. Latta, deceased, of Cincinnati, Ohio, having petitioned for the extension of a patent granted to the said A. B. Latta the 6th day of June, 1854, for an improvement in steam generators, for seven years from the expiration of said patent, which takes place on the 6th day of June, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 18th day of May next.

Thomas Allender, executor of the estate of John Allender, deceased, of West Hampton, Mass., having petitioned for the extension of a patent granted to the said John Allender the 20th day of June, 1854, for an improvement in metallic grommets, for seven years from the expiration of said patent, which takes place on the 20th day of June, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 1st day of June next.

Frederick H. Bartholomew, of New York city, having petitioned for the extension of a patent granted to him the 20th day of June, 1854, and reissued in two divisions the 13th day of November, 1860, and numbered respectively 1,071 and 1,072, for an improvement in method of governing the action of valve cocks, for seven years from the expiration of said patent, which takes place on the 20th day of June, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 1st day of June next.

Charles Parker, of Meriden, Conn., having petitioned for the extension of a patent granted to him the 20th day of June, 1854, for an improvement in cast iron vises, for seven years from the expiration of said patent, which takes place 20th day of June, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 1st day of June next.

Inventions Patented in England by Americans.

[Compiled from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

538.—BRICK KILN.—Charles L. Cornish and John McDonald, New York city. Feb. 18, 1868.

536.—BASE OF ARTIFICIAL TEETH, ALSO MOLD FOR FORMING DENTAL PLATES.—John McClelland, Louisville, Ky. Feb. 18, 1868.

MEANS FOR INCREASING THE DRAFT IN STEAM BOILERS.—Jearum Atkins, Washington, D. C. Feb. 20, 1868.

582.—BRUSH.—Thomas Maury, Washington, D. C. Feb. 21, 1868.

592.—MACHINE FOR SUPPLYING TYPE FORMS IN PRINTING PRESSES WITH VARIOUS COLORED INKS FOR EACH IMPRESSION.—Geo. W. Wood, Richmond, Ind. Feb. 22, 1868.

594.—STEAM BOILER.—Wm. H. Nobles, St. Paul, Minn., and Milton V. Nobles, Elmira, N. Y. Feb. 22, 1868.

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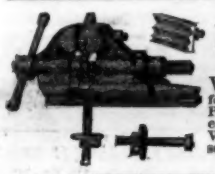

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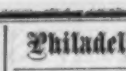

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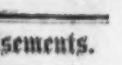

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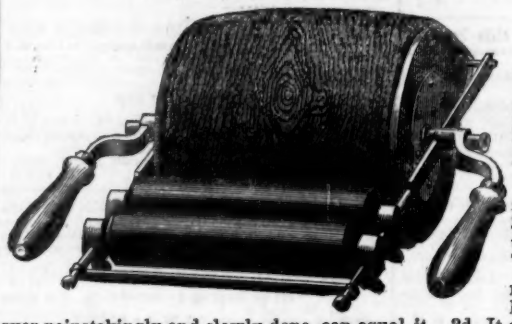

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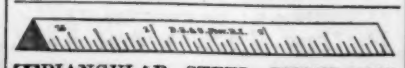

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